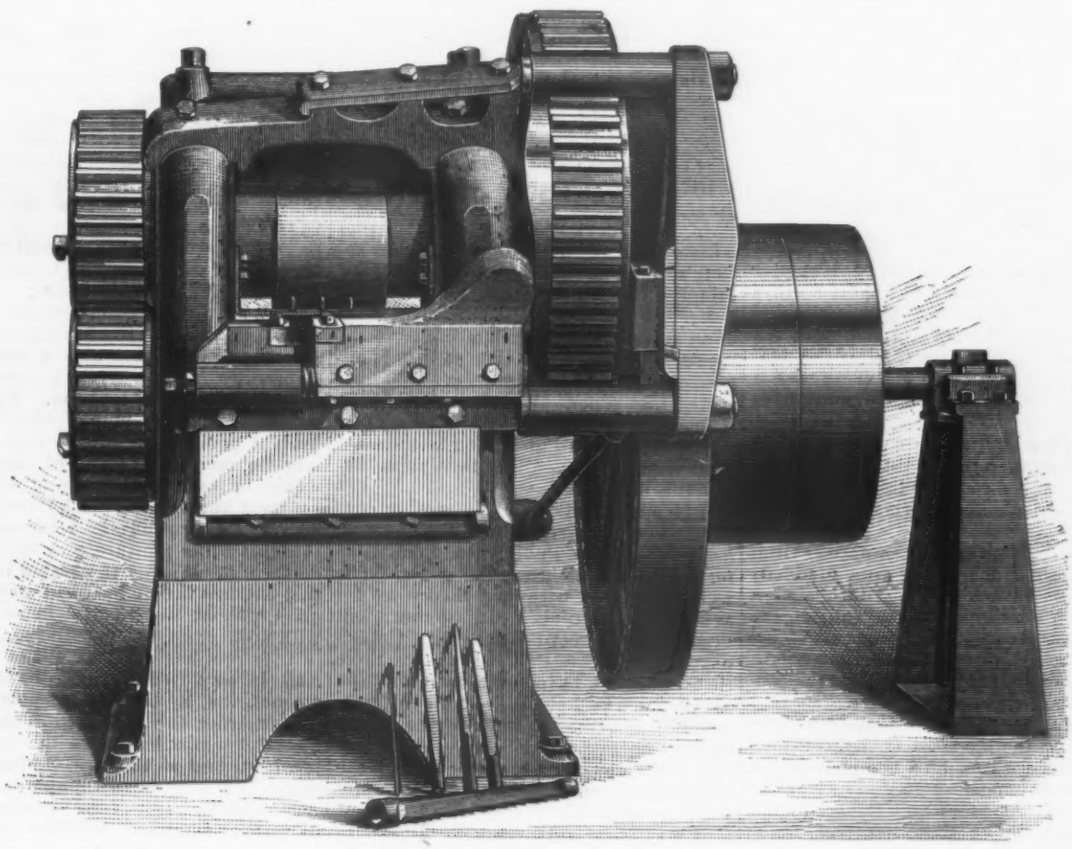
THE IRON AGE

THURSDAY, NOVEMBER 26, 1891.

Taper Rolling Machine.

The taper rolling machine of which we herewith present an engraving is made by the Coulter & McKenzie Machine Company, of Bridgeport, Conn. It will roll 1⅝ inch to any length of taper and an extreme width of 5½ inches. Of course the machine will handle any size smaller. On the front of the machine is a sliding table, arranged for squeezing and straightening the blank. It will be observed that this table is operated by a cam projection formed on the side of the gear driving the upper roll through the intermedium of the pinion on the shaft carrying the driving pulley. Provision is made for adjusting the stroke of this movable table in order to accommodate work of different widths. The lower roll is driven by a gear from the upper one, as shown at the left in the engraving. The faces of the rolls are so formed and so placed in relation to each other as to give to the ends of the blank the taper desired. This action of the rolls spreads the ends and increases the width of the plate at those points. This excess is reduced by the sliding table, which moves transversely in front of the rolls, as described. This machine performs the operations of tapering, squeezing and straightening at one heat. The various uses to which the machine can be applied are apparent.



TAPER ROLLING MACHINE.

The length of the structure over the Mississippi at Memphis is to be 8000 feet—bridge, 2600 feet; iron viaduct, 2300 feet; timber trestle, 3100 feet. Its eight piers are to be 117 to 197 feet in hight. The deepest foundation is 131 feet below low water mark. The central span is to be 621 feet in length, with cantilever arms 169 feet in length.

Coating Plates with Lead.

English newspapers report the results of a process now in operation at the works of J. Westwood & Co., Napier Yard, Millwall, for coating iron and steel plates with lead:

The plates or other articles to be coated are first pickled in a bath to remove scale. Through this bath a weak current of electricity is passed which is said to reduce the time required by one-third. From this bath the articles are passed as usual into another of lime water, which neutralizes the acid, and thence into a third of clear water. They are then immersed in a fourth bath consisting of a neutral solution of zinc and stannic chlorides, obtained by dissolving granulated zinc and tin in hydrochloric acid. From this bath they are passed into a drying chamber heated by steam, where the moisture on them from the last bath is evaporated, leaving behind a deposit of the mixed metallic chlorides, which protects the plates, &c., from oxidation. When dried these plates are ready to be passed into a bath of molten lead. On issuing from this bath the plates are found to be coated with a uniform and very adherent layer of lead. Though perfectly uniform this layer is nevertheless very thin. The ductility and strength of the iron are not decreased by the process, and a plate can be bent and closed, and again opened out, without breaking the coating. In the case of galvanized iron, bending the plate to a sharp angle causes the coating to crack. At the works there are shown specimens of water pipes coated completely inside and out with lead. One of the pipes was a riveted steel pipe about 9 inches in diameter. For such purposes the process seems peculiarly advantageous, as it not only preserves the metal, but allows calking to be entirely dispensed with. Samples of ship plates have also been coated and the riveting afterward done in the usual way without breaking the coating, which, we may also remark, takes paint very well. The thinness of the coating is remarkable, as 2 ounces per square foot of plate proves sufficient, whereas 3 ounces of spelter are in general required in galvanizing. The inventors claim that an additional economy will be effected by the fact that there is no precipitate or sediment deposit in their melting tanks, as occurs with zinc, while at the same time the molten lead has no effect on the material of which the bath is constructed, which may, therefore, last indefinitely.

The Hudson River Bridge promoters are struggling with the question how to provide storage room for cars and merchandise in New York City, space is so difficult to acquire. A New York special to a country paper says: "Chief Engineer Clark has decided now that five miles of storage room can be built in the air under the New York approach of the bridge. Mr. Clark's plan is to suspend a set of tracks underneath and from the bridge all the way down to the depot." Col. James B. Andrews, one of the authors of the scheme, says the company are engaged in getting agreements from the roads to use the bridge after it is built.

American Society of Mechanical Engineers.

NEW YORK MEETING.

Wednesday morning the members and their friends were conveyed to the Brooklyn Navy Yard and the De La Vergne Refrigerating Company, luncheon being served *en route*. In the evening there was a theater party at Palmer's.

The first paper read Thursday morning was by W. E. Crane on

IDIOSYNCRASIES OF CHIMNEY DRAFT.

One of the favorite themes of the compiler of formulæ is that of chimney draft, and it becomes an easy matter for a mathematician to tell just what draft a certain chimney will give. The poor engineer who must design and use these chimneys finds it a very complex problem, and there are little things which enter into it which the mathematician thinks are of no account. We are told that it makes no difference if the inside flue stops somewhere in the chimney or is continued to the top, that it may be either larger or smaller at the top without detriment.

The question will naturally arise as to the effect on the velocity of a current of air or gas if it is suddenly enlarged, as it must enlarge when the inside flue is shorter than the chimney itself, as it must be in a measure affected the same as when issuing from the top. We are also told that the draft cannot be increased after the temperature arrives at 600°; and if we wish a draft of 0.85 inch of water we must have a chimney or stack about 116 feet high, although this is attained in a stack 90 feet high; while with that hight (90 feet) 0.75 to 0.80 inch is a common thing where the temperature of gases entering the chimney is 800°.

By some claiming to be authorities it is urged that a chimney must grow gradually larger from bottom to top. With a view of getting some light on the subject, the writer has taken the draft from a number of chimneys working under various conditions, and presents the results for the consideration of the society. He regrets that he has not the time at his disposal to give the subject the attention it deserves, and also regrets the lack of a complete set of accurate instruments.

Chimney No. 1.—One hundred and thirty feet high; flue, 100 feet high; round, 4 feet diameter; taking gases from Babcock & Wilcox boiler, 59½ feet grate surface; and Harrison boiler, 17 feet grate; consumption of coal, 14 pounds per square foot of grate, and temperature of gases, 340°. Draft in inches of water, 0.55 inch. . . .

Chimney No. 6.—An iron stack 3½ feet in diameter at bottom and 4 feet at top, 68 feet high; temperature of flue gases, 375°; three Harrison boilers, with grate surface total of 51 square feet; coal consumption, 12 pounds per hour per square foot of grate. Draft, 0.35 inch.

It is not necessary to quote any further from the paper, since the above is sufficient for a complete understanding of the

Discussion.

The discussion resolved itself into an attack upon the Publication Committee, who were asked to expunge the paper from the "Transactions" because of its inaccuracies. It was stated that it should not have been allowed to go before the society at all in its crude shape and with its false insinuations. It was shown that in the four cases given in the paper which contained all data needed for mathematically ascertaining the draft, the results experimentally obtained by the author, with a "lack of a complete set of accurate instruments," coincided with results reached by the use of Rankine's formula.

Mr. Kent said, in part: It appears that Mr. Crane's observations confirm the formula and that his criticism is not well taken. Mr. Crane is to be commended for his observations and I have nothing against him personally; but I have something to say about the Publication Committee who allowed this paper to be printed. A paper that does not advance engineering objects, which is manifestly in error, can afterward be expunged from the "Transactions," and I call upon the Publication Committee to expunge this paper. It is altogether wrong; no engineering student could have written such a paper. The paper will certainly be a discredit to the society if allowed to go into the "Transactions."

Mr. Parsons of the Publication Committee, said: The committee thinks in publishing this paper it did a good service. The committee does not agree with Mr. Kent in his remarks, and rather take offense at the broad way in which he makes his statements. If the committee's work is not liked by the members, it will step aside and give room for others.

Mr. Kent: I do not believe Mr. Parsons could have read this paper.

Mr. Parsons: These papers are the individual opinions of the men who write them, and not the opinions of the committee, and are presented not as the society's opinion, but for the purpose of bringing forth discussion.

Mr. Ashworth: This is now in the form of an attack upon the committee. Now, I speak earnestly upon this subject. My sympathy is with the gentleman who presented this paper. We are not all great scholars and philosophers. I move that the Committee on Publication be indorsed in its action in presenting this paper before this meeting.

A member said that this motion conveyed the impression that the meeting commended the Publication Committee for publishing this particular paper. The facts fully agree with the theory as far as chimneys are concerned. So much had been put on record before Mr. Crane's paper reached the Publication Committee that it should have examined it. The society must be protected and the "Transactions" must be protected by the Publication Committee in a case of this kind. Exception was taken to the view that the Publication Committee is justified in presenting papers full of errors, in order that they may bring forth valuable discussion. Wrong statements should not be published with the expectation that they will be corrected in discussion.

Mr. Henning said: It would be very unfortunate if any of our members were allowed to get up in the meeting and take our time for the avowed object of making false statements for the sake of bringing out discussion. I am surprised that the Publication Committee should have allowed such a paper. Our time is so valuable that we have no time to listen to errors in order to bring forth discussion. Out of respect for the society I do not think it is right to present such a paper. If the gentleman thinks he has facts of sufficient importance for this society he should take time to prepare his paper in a proper manner, but not give us partial facts, draw general conclusions and waste our time. If the paper is not properly prepared it is not right to present it before the society.

Mr. Boyd said: I know the duty of a Publication Committee is to consider all that is brought before it. It is clearly stated that the society as a body is not responsible for the individual opinion of a member. This whole matter, if I may be pardoned for making myself critical, is in bad taste. It is a matter of regret that the gentleman has been in fault in writing his paper. I rise to a point of order, and move that this resolution be laid on the table. This motion was carried.

The following topical question then received the attention of the meeting:

IS IT BETTER OR NOT TO HAVE THE LEAD INCREASE WITH THE LOAD IN HIGH-SPEED AUTOMATIC ENGINES, AND IF SO, WHY?

W. O. Webber said he thought it better to have the lead increased with the load, for the reason that the impulse necessary to keep up the momentum with the heavier load should be greater at the starting point than with the light load. In support of this he submitted three diagrams—one taken from an engine which had an increasing lead and gave very close regulation; also diagrams showing a regulation under loads with the lead increasing with the load, and a diagram showing the lead remaining constant and having no reference to the load. In other words, he had found the regulation to be more constant, and the general performance of the engine better, under careful tests, with the increasing lead in proportion to the load.

E. J. Armstrong presented a written discussion as follows: Regarding the query "Is it better or not to have the lead increase with the load in high-speed engines?" the writer would take the affirmative, believing that, at least with single-valve engines, the advantages to be gained by such an arrangement are well worth the attention of designers. To summarize the most important considerations:

1. It is an aid to quiet running. At the latest cut-off of a single-valve automatic the compression is low and is nearly neutralized by the high terminal pressure on the other side of the piston. With high speeds a sharp lead at this point helps to prevent pounding, and the best amount may be much in excess of that which would be permissible were it to remain constant throughout the governor range. At very early cut off the compression approaches boiler pressure, and the pressure on the other side of the piston is low, so that lead has little effect, and may be negative without bad results—in some cases with positive gain in smooth running.

2. It prevents racing. When constant lead is employed it must be small in amount, as it becomes impossible for the governor to entirely shut off steam; the valve will at least open the amount of the lead, and if this is considerable the engine will race when running unloaded. Any misadjustment of the valve occurring by wear or otherwise will also cause racing by admitting steam to one end of the cylinder. A negative lead at early cut off removes trouble from this source, and by enabling the governor to entirely shut off steam, gives it better control of the engine.

3. It makes it easier to obtain good good governing. Apart from giving the governor better control there is an advantage in that the center of the eccentric does not have to shift through so great a distance, consequently the governor may have great leverage over the eccentric, and as a result greater stability.

4. It tends to equalize the compression and the exhaust opening. The angular advance of the eccentric being slightly greater at late cut off than with constant lead, the exhaust closes earlier and the compression is a little higher. At early cut off the angular advance is very much less than with constant lead, and the exhaust closing later, the compression does not run nearly as high. The exhaust does not open so prematurely at early cut off as with constant lead, and opens earlier at late cut off. The most marked effect on the cards is the more nearly equal compression, which by permitting less clear-

ance should be conducive to economy. At early cut off the steam line is a little lower and slopes off to the expansion curve a little more. Though this does not produce so pretty a card it is an open question whether it is bad or not. At early cut off there is so much difference between the water consumption, as shown by the card and by the meter, that the cylinder condensation must be very great. Possibly the slight wire drawing may reduce this enough to balance the loss in card area.

INFLUENCE OF THE STEAM JACKETS OF THE PAWTUCKET PUMPING ENGINE

was the title of a paper by William Kent. Papers with the same title as the above have been presented to the society by Profs. Jas. E. Denton and D. S. Jacobus. In these papers tests of the Pawtucket pumping engine have been described in great detail. Concerning the influence of the jackets upon the economy of the engine, the leading conclusion of Professor Denton was that "the most that can be claimed for the jacket is that it probably caused no loss, and may possibly have caused a saving, not exceeding 3 per cent. of the total consumption." Professor Jacobus' conclusions, made after a comparison of his own tests with those of Professor Denton and of John Walker, superintendent of the water works, are:

"1. The effect of jackets on the form of the expansion curves of both the high and low pressure cylinders is so small that the errors involved in the most accurate measurements of the indicator diagrams make it impossible to show any difference in the laws governing the same.

"2. The economy of the plant when working under the three sets of conditions is about 1.7 per cent. in favor of using the flue reheater, and 2.5 per cent. in favor of using both jackets and flue reheater, over that obtained when neither the flue reheater nor jackets are used."

As the results and conclusions in these two papers have been a surprise to many engineers, and as in their discussion some doubt was expressed upon the accuracy of the observations or of the apparatus used in the tests, Professor Denton desired that further tests of the efficiency of the steam jackets be made by an observer other than himself, and that in these tests all the possible precautions should be taken which had been suggested by the discussion of the papers above mentioned. At his request the writer consented to make a series of tests jointly with Professor Jacobus, and the object of this paper is to place the results of these tests on record.

The paper concludes as follows: "The tests above reported, taken in connection with those previously reported, I think prove that in the use of the Pawtucket pumping engine the use of the jackets gives a saving of between 1 per cent. and 4 per cent, but they do not lead to any more general conclusion than that jackets may be expected to give this saving in a cross compound Corliss engine of 140 horse-power, running at about 50 revolutions per minute, supplied with dry steam of 125 pounds gauge pressure, and cutting off at about one-quarter stroke in the high and one-third stroke in the low pressure cylinder. Before this conclusion can be expanded to apply to other engines, there should be tests made with equal precautions and refinements to those made with the Pawtucket engine, on such other engines, with different dimensions and different conditions, such as pressure of steam, moisture or superheat in the steam, speed of revolution, number of expansions in the two cylinders, &c. In view of the rapidly increasing use of compound engines with high pressures and higher speeds than the Pawtucket engine, it is much to be desired that a series of tests should be undertaken in order to learn whether in such engines the steam jacket causes any saving sufficient to compensate for its extra cost. It is gratifying to be able to confirm the general results as to the economy of the Pawtucket engine, which have been found by Professors Denton and Jacobus, as well as those that have been made by Mr. Walker, the engineer of the water works. It is worthy of notice also that this engine, built nearly 15 years ago, has not been surpassed in economy by any two-cylinder compound engine, nor as a pumping engine has it yet been surpassed by any type of engine whatever."

Discussion.

Horace See presented the following:

The triple-compound engines of the steamship Ohio and her sister ships, built in 1873, had their cylinders steam jacketed. They were run for days with and without steam in the jackets, to ascertain whether any good could be derived from the use of the former. The coal consumption was found to be no less with these engines, which made 60 revolutions per minute, with the jacket in use than with the steam shut off. The triple-compound engines of the steamship Aberdeen, built in 1882, had the intermediate and low pressure cylinders jacketed, but not the high pressure. They were tested by Dr. A. C. Kirk, their designer and builder, assisted by Mr. Parker of the British Board of Trade. The tests were made with and without steam in the jackets and the engines making 65 revolutions per minnte. The drain water was measured in the former case. The result was found to be practically the same whether the amount of steam was used in the jackets of the intermediate and low-pressure cylinders or utilized directly in the cylinders. One of the conclusions reached by Dr. Kirk was that "When we take into account the thickness of the interior chamber of the cylinder, and the speed of the piston, it is not conceivable that the interior surface of the chamber can be maintained by the steam in the inside of it at a uniform temperature. In fact, the slower an engine runs the more efficient the jacket becomes." The tests made by Messrs. Kent, Denton and Jacobus of the Pawtucket engine not only emphasize those made of the marine as to the value of the steam jacket, but have also demonstrated that an engine having unjacketed cylinders can be run as slow as 48 revolutions per minute without impairing its economy. The careful work of these gentlemen is valuable in throwing light upon a subject upon which for many years there has been much diversity of opinion, and if properly considered should do much toward relieving the steam engine of a costly and dangerous adjunct.

Professor Jacobus supplemented the paper by describing tests he had made of this engine with steam containing a small percentage of moisture. This was undertaken because the opinion had been expressed that the small effect of the jackets might be due to the fact that the steam entering the engine is slightly superheated. On November 6 the engine was tested for eight hours without jackets in use, and with steam superheated 17° F. 2 feet from the cylinder. The results gave 14.16 pounds per hour per horse-power, which is 0.8 per cent. lower than Mr. Kent's test under similar conditions, but with only 11° of superheating.

A portion of the steam pipe between the boiler and the engine, about 15 feet long, was then stripped of the non-conduction covering. The extra radiation loss from the pipe thus permitted reduced the superheating to about 5° F., but as it was desirable to destroy all superheating, water from the boilers was injected into the steam pipe in such an amount as to destroy the remaining superheating and produce a small degree of wetness. The exact degree was not determined, but from what follows it is fair to conclude that the moisture averaged at least 0.1 per cent. The engine was then again tested for seven hours on November 7, and the result was 14.40 pounds of steam per hour per horse-power, a result differing from that obtained without jackets and 17° of superheating by 1.7 per cent., which is less than the amount of variation ascribable to the accidental errors of the most careful tests. The following general conclusions are drawn:

1. The gain in economy by the jackets and flue reheater with steam superheated about 5° F. (Mr. Kent's conditions) over that obtained when the jackets and flue reheater are not in use, and with steam containing a slight percentage of moisture, is about 3½ per cent.

2. If the engine is run with and without jackets with slightly moist steam, the probable difference in favor of the jackets, allowing the same gain in economy per degree of superheating with the jackets in use as was observed in the tests without the jackets, will be 3 per cent.

3. The small advantage of jackets in the Pawtucket engine, as compared to the large gain by jackets reported for other engines, is not ascribable to the small amount of superheating in the steam.

The following question was then considered:

HAVE YOU HAD ANY EXPERIENCE WITH SYSTEMS FOR PURIFICATION OF BAD FEED WATER BEFORE IT GETS INTO A STEAM BOILER, EITHER BY PRECIPITATION OR OTHERWISE?

Mr. Ashworth said that the purification of impregnated waters had become a very serious question in his section of the country (Pittsburgh). They passed the water through a shell maintained at a temperature equivalent to the steam pressure in the boiler. The impurities are thus precipitated before entering the boilers. It is absolutely necessary to have the pressure in the purifier the same as in the boiler. A system of purifiers of the cylindrical form, having a series of shells, were introduced at the Beaver Falls plant of Carnegie, and the best results have attended its operation. It would have been impossible to have carried on business without the introduction of this purifying system.

The next paper, by J. W. Cole, described

A COMBINATION IRON AND OAK PAVEMENT,

consisting of cast-iron pockets and bottom plate with oak blocks. The pockets are filled with green oak $3\frac{1}{16}$ inches square on the top and about 5 inches long. The blocks are driven into the iron pockets some 3 inches, and receive the traffic on the end of the grain of the wood. Each full-sized bottom plate has five pockets, four half pockets and four quarter pockets. Thus at the joints of the bottom plates in some instances, two, three, or even four bottom plates may support one of the hardwood blocks, dividing the strain and holding an even surface on the upper side of pavement. Each iron pocket has a small hole for draining away any moisture.

This block pavement was put down May 30, 1890, with the newly sawed oak blocks projecting 2 inches. In August, 1890, I inspected it and found them hammered and worn to 1⅞ inch projection; and in September, 1891, another inspection showed them projecting about 1¼ inch above the metal pockets. The traffic crossing it includes largely loads of roofing slate and of rough curb stones, and loads of from 3 to 5 tons each are quite frequent.

San Francisco Meeting.

The following telegram, sent by W. R. Eckart, was read by the secretary:

The Mechanical Engineers, the technical societies of the Pacific Coast, the Governor, the Mayor and the prominent citizens, hail with pleasure the announcement to hold the spring meeting in San Francisco, and a committee has been arranged to make the necessary arrangements, and a warm welcome is extended.

The next paper was by Prof. De Volson Wood, on "Test of a Pulsometer," followed by H. C. Spaulding's paper on

ELECTRIC POWER DISTRIBUTION.

The paper describes what may be done with the electric motor, and points out the increased convenience and economy to be expected from its use. It briefly mentioned what had already been done in this line, and pointed out when it could be further employed to advantage.

Discussion.

In the discussion following this paper the extreme simplicity of the electric motor—being comparable, as stated at a former meeting by Oberlin Smith, to a grindstone, having but one revolving part mounted upon a shaft—was pointed out and dwelt upon, The efficiency of the electric power installment, taking the dynamo as losing 10 per cent., the motor having an efficiency of 90 per cent., and copper wire of sufficient size being used to convey the current without materially increasing the percentage of loss, was also discussed. The opinion was expressed that the principal obstacle at present interfering with the introduction and adoption of the electric motor in machine shops was its great first cost; that if we had an electric motor on every machine requiring 1 horse-power and over to drive it, the results would be economical as far as running expenses are concerned, owing to the close regulation of the motor and the fact that when it stopped expenses ceased. One member stated that he was informed by a manufacturer of motors that in a small power motor, 1 horse-power or under, the copper would cost less that $5; iron is cheap, as every one knows, so that, therefore, the expense of construction was due almost entirely to the labor put on the motor. That there is a round profit for the manufacturer seems evident.

The next topical question was

IN ARRANGING CHIMNEY STACKS FOR A BATTERY OF BOILERS, IS IT BEST TO USE ONE FOR EACH PAIR, OR A LARGER CHIMNEY FOR THE ENTIRE BATTERY?

Chas. T. Porter by the aid of a diagram on the blackboard explained a possible arrangement of several boilers using one chimney. These could be arranged in radial lines, the chimney being placed in the center, and would serve for batteries of four, six, eight, twelve, &c. While it would not make so convenient an arrangement and would take more space than is now considered good practice, it would serve one purpose in insuring an equal draft for each boiler. It was afterward pointed out by others that there would be no difficulty in obtaining equal draft if all boilers of a battery, no matter what their position might be in relation to the chimney or their relative distance from it, were provided with flue areas so proportioned as to allow for their difference in location. In other words, making allowance for the distance the furthest boiler is away from the chimney in its flue leading to the chimney would obviate all trouble and would insure an even draft. Instances were cited where many boilers are now supplied by one chimney and no trouble whatever experienced. If the flues have the same resistance then the pressure will be the same.

The convention closed with the consideration of the following topical question:

WHY SHOULD ANY ONE CUT A ½-INCH BOLT WITH 12 THREADS TO THE INCH? IS THERE ANY OBJECTION TO THE UNITED STATES STANDARD OF 13 THREADS?

This provoked a long and interesting discussion, the general opinion being that the United States standard of 13 threads was by far preferable to that of 12 threads. One member pointed out that he was compelled by the demands of his business to make ½-inch bolts with 12 and 13 threads, and he found that with the exercise of the greatest care it was impossible to prevent their becoming mixed, and when mixed it was the most difficult matter to separate them. Mr. Porter gave an interesting account of what Whitworth had once told him as to the origin of the 12 threads to the inch. Before the introduction of any standard, or even an attempt to standardize threads, machine men of England cut threads according to their own notion. Whitworth collected specimens of all the ½-inch bolts he could find made by other manufacturers, and took the mean of the whole as a standard thread. This happened to be 12 threads to the inch for the ½-inch bolt, and it has been used ever since. He also said that the adoption of 55° for the angle of the thread was also generally supposed to be the result of the same operation—that is, it was supposed to be an average of the threads as then cut. In fact, it was adopted for the same reason that many of the arbitrary dimensions had been adopted, in order that repairs could only be made in one shop. The manufacturers in early times were largely influenced by the principle that if they made a machine difficult or impossible to be repaired in any shop but their own, they would, once having introduced their machine, retain that much patronage.

Excursions.

Thursday afternoon and Friday were occupied by members in visiting the establishments, a list of which we gave in our last issue. Small parties were made up, as it was not considered expedient to convey so many at one time. It also gave the members the privilege of selecting the works they preferred.

An admirable provision was introduced at this meeting to facilitate the movements of strangers. Cards were provided giving explicit directions for reaching any of the works. The following is a specimen:

NORTH RIVER IRON WORKS (W. & A. FLETCHER CO.),

HUDSON ST., 12TH TO 14TH, HOBOKEN, N. J.

Reached from ferry at foot of West 14th street. Take west-bound cross-town lines at 18th or 14th streets, and transfer to ferry car at Ninth Avenue. Take any up and down town line to 18th street and any line west of Fourth avenue to 14th street. The works are a step south of the Hoboken slip on the Jersey side.

Ask for Messrs. Fletcher, or Mr. Stevenson Taylor.

HAVE YOUR BADGE OR BUTTON WITH YOU.

Henry K. Swinscoe, Clinton, Mass., has secured a patent on an improvement in the galvanizing process. The improvement as described in the specification is in the method of galvanizing or treating wire cloth or netting, which consists in immersing the article to be galvanized in a bath of molten metal and then drawing from the bath and through a wiper composed of coal dust floating on the surface of the molten metal, the claim being made that coal dust is more efficient than coke.

Wright's Report.—III.

The Cost of Production of Coke and Iron Ore.

After a presentation of some of the figures brought forward by Carroll D. Wright on the cost of production of iron and steel we may now turn to the raw materials. The Commissioner of Labor has gone with a good deal of detail into the cost of mining bituminous coal, in which we need not follow him beyond giving below the summaries of cost of mining:

Cost of Mining Bituminous Coal, Tons of 2000 Pounds.

Elements of cost.	Run of Mine.	Lump.
Labor	$0.648	$0.933
Officials and clerks	0.017	0.042
Timber	0.015	0.026
Other supplies and repairs	0.042	0.050
Taxes	0.006	0.007
Totals	$0.728	$1.058
Value of screenings	....	$0.133
Net Total	....	$0.925
Quantity, net tons	7,446,253	5,563,547

Since there are no means of ascertaining to what extent different districts are represented in these totals, it is impossible to ascertain to what extent they may be regarded as fairly reflecting the industry in the country at large. It will be readily understood how deceptive such averages may be. Let it be supposed that an unusual number of producers in a section endowed with exceptional natural advantages see fit to report to the Commissioner of Labor while the mine operators in many other districts hung back. His aggregates are then tainted with an undue proportion, with reference to the whole of that one particular district. The same point applies to Mr. Wright's

Cost of Coke

as summarized in the following table. It gives the cost of 2,036,183 tons of 2000 pounds, produced from 3,166,308 tons of coal:

Cost of Coke Making—Elements of Cost.

Coal for coking (3110 pounds)	$1.219
Labor	0.357
Officials and clerks	0.028
Supplies and repairs	0.058
Taxes	0.005
Total	$1.667

We do not repeat Mr. Wright's figures of "theoretical cost," because we do not attach the slightest value to them. It is, however, of considerable interest to study the individual returns, which we extract from the tables published: (See Table I.)

It is perhaps useless to say that the largest coke producer in the country is not in the list. No indications are furnished as to the locality in which the different works are situated, but there are some totals which are very low, and which confirm the impression that $1 coke, in some sections of the country, leaves a very neat sum applicable to depreciation account and for exhaustion of lands, counting the latter at cost, however, and not at the nominal fancy valuation now placed upon property of this kind. In only one case does the labor cost of coking rise above 50 cents.

A very interesting series of figures are those gathered by Mr. Wright on

The Cost of Iron Ore.

In a good many cases the shipping mines can be readily identified. Thus we believe that the Champion, Norrie, Chapin, Ludington, Republic, Minnesota and Chandler can be pointed out as being among those reported. The first five are Southern mines. Among those which seem to be Lake mines are Nos. 11, 12, 13, 15, 18 and 20 to 42, so that the four great

Table I.—Cost of Production of Coke.

Establishment number.	Days of running time.	Coke produced (tons of 2,000 pounds).	Coal used in production (tons of 2,000 pounds).	Pounds of coal used to produce 1 ton of coke.	Coal for coking.	Labor.	Officials and clerks.	Supplies and repairs.	Taxes	Total.
1	313	75,949	140,534	3.701	$2.028	$0.348	$0.013	$0.026	$0.001	$2.416
2	313	65,520	112,896	3.446	1.911	0.302	0.055	0.009	.....	2.277
3	304	64,411	114,758	3.563	1.887	0.373	0.079	0.062	0.002	2 403
4	300	45,059	73,836	3.277	2.089	0.394	0.033	0.034	0.007	2.557
5	353	207.514	454,774	3,400	1.709	0.360	0.036	0.040	0.007	2.143
6	302	111,039	172,659	3 110	1.864	0 286	.....	0.131	0.002	2.283
7	353	137,693	229,488	3,333	1.461	0.439	.....	0 069	0.002	1.971
10	310	34.055	61.219	3,595	1.213	0.328	0.026	0 013	0.004	1 584
11	165	27,282	39,960	2,929	0.727	0 282	0.018	0.030	0 003	1.058
12	172	31,980	49,958	3,124	0.767	0.259	0.014	0.032	0.004	1.096
13	226	169,920	239,882	2,823	0.717	0.308	0.007	0.075	0 001	1.108
14	229	43,744	63,707	2,913	0 880	0.311	0.009	0.054	.....	1.204
15	149	26,818	33,780	2,519	0.718	0.370	0.028	0.013	0 003	1.132
16	182	20,565	28,373	2.759	0 646	0.373	0 029	0.134	0.005	1.087
17	220	24,000	36,700	3.058	1.070	0.743	0.125	.....	.....	1.938
18	272	45,404	61,225	2,697	0 535	0.283	0.006	0.012	0.002	0.838
19	278	115,921	154,562	2,667	0.503	0.300	0.017	0.011	0.002	0.833
20	287	49,686	76,493	3,079	0.491	0 217	0.024	0.005	0.002	0.739
21	310	256,345	341,800	2,667	0.551	0.396	0.021	0.166	0.015	1.149
22	156	24.563	40,938	3,333	0.405	0.257	0.060	0.032	0.006	0.760
23	197	44.407	74,012	3.333	1.333	0.385	0.055	0.016	0.005	1.794
24	217	87,384	145,639	3.333	1.861	0.346	0.048	0.027	0.006	2.288
25	304	63,977	106,628	3,333	1.500	0.330	0.039	0.025	0.005	1.899
26	248	22,577	36,120	3.200	2.408	0.419	0.120	0.018	0.003	2.968
27	310	99,508	143,051	2.875	0.928	0.454	0.012	0.030	0.001	1.425
28	165	22,094	38,510	3,335	1.265	0 425	0.087	0.044	0.004	1 825
29	264	36,970	61,345	3.319	1.259	0.283	0.081	0.037	0.004	1.664
30	201	14,198	23,661	3,333	1.160	0.463	0.070	0.046	0.003	1.742

Table II.—The Cost of Mining Ore.

	Kind of ore.	Iron.	Phos.	Days of running time.	Iron ore mined. Tons of 2240 pounds. Total	Per day.	Labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Total.
1	Red, hard fossiliferous	35.46	(a)	250	93,055	372	$0.558	$0.021	$0.059	$0.003	$0.641
	Red, soft fossiliferous	47 78	(a)								
2	Red fossiliferous	46.00	0.16	300	19,066	64	0 401	0.052	0.040	0.005	0.498
3	Brown hematite	50.00	0.05	250	33,000	132	0.510	0.008	0.053	0.003	0.574
4	Red hematite	50.98	(a)	240	89,826	374	0.545	0.023	0.039	0.004	0.611
5	Red hematite, hard	38.23	(a)	270	138,055	511	0.560	0.017	0.025	0.003	0.605
	Red hematite, soft	51.18	(a)								
6	Red hematite	(a)	(a)	200	63,788	319	1.131	0.085	0.011	0.001	1.228
7	Brown hematite	51.31	(a)	160	32,236	201	0 784	0.051	0.075	0.003	0.913
11	Magnetite	65.50	0.114	307	52,713	172	1.132	0.078	0.641	0.064	1.915
12	Hematite	64.50	0.030	391	69,030	229	0.970	0.039	0.362	0.041	1.412
13	Hematite	63.90	0.045	293	73,506	251	0.543	0.049	0.474	0.019	1.085
15	Hematite	61 00	0.085	247	35,200	143	1.136	0.071	0.361	0.038	1.606
17	Hematite	58 00	0.045	240	32,600	136	1.106	0.071	0.248	0.037	1.462
18	Specular	62.70	0.109	296	114,579	431	0.837	0.036	0.748	0.075	1.696
19	Red hematite	61 00	0.055	247	74,000	300	1.108	0.012	0.357	0 044	1.521
20	Magnetite and specular	63.33	0.040	306	215,098	703	1.807	0.085	0.460	0.070	2.512
21	Hematite	63.29	0.045	307	771,279	2,512	0.805	0.010	0.406	0.028	1.249
22	Red specular, hard	63.00	0.068	303	323,342	1,067	1.155	0 045	0.451	0.088	1.739
	Hematite, soft	60.50	0.089								
24	Red hematite	60.00	0.055	308	29,736	97	1.615	0.071	0.517	0.032	2.235
25	Specular	65.00	0.050	301	20,033	67	2.054	0.099	0.414	0.063	2.630
26	Hematite	58.61	0 592	306	185,434	606	0.897	0.033	0.306	0.022	1.258
27	Hematite	58.80	0.188	313	50,200	160	0.891	0.024	0.578	0.012	1.505
28	Hematite	60.60	0.344	304	159,538	525	0.696	0.023	0.367	0.018	1.094
29	Hematite	62.85	0.054	306	550,972	1,801	1.283	0.023	0.355	0.057	1.718
30	Blue hematite	65.00	0.027	318	21,500	68	1.312	0.209	0.475	0.042	2.038
31	Hematite, non-Bessamer	66.00	0.090	300	b116,000	387	1.382	0.092	0.359	0.070	1.903
	Hematite, Bessemer	67.00	0.010								
32	Specular, No. 1	67.60	0.042	305	287,390	942	1.320	0.092	0.452	0.057	1.921
	Specular, No. 2	63.52	0.055								
	Magnetite	69 77	0.051								
33	Red Specular, Bessemer	65.00	0.045	307	c140,440	457	1.397	0.032	0.482	0.063	1.974
	Red specular, non-Bessemer	62.00	0.065								
34	Specular, slate	62.66	0.150	306	244,060	798	1.573	0.041	0.627	0.078	2.319
	Hematite	61 00	0 068								
35	Hematite	52.18	0.042	152	18,980	125	0.566	0.006	0.261	0.026	0.919
36	Red hematite	62.33	0.120	153	26,221	171	1.481	0.008	0.306	0.030	1.825
37	Red hematite	62.60	0.112	153	53,315	348	0.930	0.014	0.305	0.020	1.269
38	Red hematite	63.80	0.100	127	41,398	326	1.102	0.017	0.221	0.020	1.360
39	Red semi-specular hematite, Bessemer	67.70	0.051	306	d558,800	1,826	0.982	0.059	0.286	0.013	1.340
	Red semi-specular hematite, non-Bessemer	67 43	0.100								
40	Hematite	65.00	0.040	308	317,827	1,032	0.895	0.059	0.289	0.010	1.253
41	Hematite and specular	59.70	0.086	290	45.440	157	0.514	0.185	0.307	0.026	1.032
42	Specular	65.00	0.026	308	117,403	381	1.188	0.186	0.436	0.043	1.853
43	Specular hematite	55.66	0.115	302	40,000	132	0.720	0.070	0.276	0.002	1.068
45	Fossiliferous hematite	42.52	0.750	306	78,549	259	0.928	0.032	0.385	.....	1.345
46	Magnetite	64.50	0.050	313	145,215	464	0.467	0.038	0.276	0 048	6.829
58	Hematite	43.03	0.250	240	45,815	191	1.018	0.126	0.050	0.002	1.196
65	Fossiliferous, hard	34.56	0.375	300	29,958	100	1.087	.	0.060	0.007	1.154
	Fossiferous, soft	47.14	0.480								
66	Hematite	30.00	0.400	310	123,574	399	0.745	0.019	0.391	0.006	1.161
67	Brown hematite	42.00	0.013	310	30,250	98	1.130	0.100	0.240	0.010	1.480
68	Brown hematite	48.09	0.482	312	63,500	204	1.007	0.081	0.172	0.023	1.283
69	Brown hematite	40 00	0.642	240	33,546	140	0.516	0.038	0.206	..	0.760
70	Brown hematite	42.00	0 003	312	49,460	159	1.064	0.170	0.221	0.007	1.462
71	Red hematite, Bessemer	62.00	0.036	295	51,554	175	1.974	0.106	0.990	0.005	3.075
72	Hematite	60.50	0.257	296	218,738	739	0.655	0.033	0.369	0.012	1.053

a Not reported.
b Bessemer, 8800 tons; non-Bessemer, 107,200 tons.
c Bessemer, 65,000 tons; non-Bessemer, 75,440 tons.
d Bessemer, 298,314 tons; non-Bessemer, 260,486 tons.

lake districts are well represented, and that thus the general average which Mr. Wright draws is very low. As the average cost of mining 6,317,171 tons, the following figures are arrived at:

Cost of Iron Ore.

Labor	$1.039
Officials and clerks	0.049
Supplies and repairs	0.359
Taxes	0.035
Total	$1.482

How little reliance can be placed upon such averages, even when they cover so large a percentage of the total product, is clearly seen by a comparison with the census figures collected by John Birkinbine, special agent. These place the average cost of the iron ore produced in the United States during the year 1889, the same chosen in the majority of instances by Mr. Wright, at $1.71, the average expenditures for wages being $1.06.

Mr. Wright figures the "theoretical cost" in his usual manner, making the average royalty 20.3 cents. We have had the curiosity to figure out the average of the whole tonnage on which royalty was really reported and find it to be 33.8 cents. It is true, of course, that in many cases the ownership of the lands rests with the mine owner, who does not, therefore, pay a royalty, but under such circumstances it would generally be a wise business course to write off annually a moderate sum at least for exhaustion.

The principal interest in Mr. Wright's report rests, however, with his figures on individual mines. We present the principal ones in Table II.

We may note that probably No. 20 is the Champion, No. 21, the Norrie; No. 29, the Chapin; No. 31, the Ludington; No. 32, the Republic; No. 39, the Minnesota, and No. 40, the Chandler, all of them lake mines. Including insurance, interest, depreciation of value of plant and royalty the cost of the Champion ore was $3.096; the Norrie, $1.667; the Chapin, $2.471; the Ludington, $2.483; the Minnesota, $1.902, and the Chandler, $1.648. To this, of course, must be added the cost of hauling to shipping port and the vessel freight to the lake receiving port. It is needless to say that the prices realized for ore have never yet been down to figures at which the large mines did not have a neat margin left.

Minnesota Iron Ore Shipments.—A Duluth press dispatch under date of the 20th inst. says: "Shipments of ore from Two Harbors the last week were 163,140 tons, over four times as great as for the same week in 1890. There are 10,174 tons on dock waiting to go forward, and about 12,000 tons still to come from the Minnesota mine. The output to date of the Vermillion range is 902,416 tons, against 879,971 last season. The total shipments last year were 880,264 tons. For the present year they are expected to reach about 917,000 tons, or an increase of 35,000 tons. The Chandler Mine has finished shipping from Two Harbors. Its record for the season was 372,272 tons. In addition 1240 tons have been sent to the Duluth blast furnace. This mine has already begun its stock pile for the next season and is mining more ore than ever. Its daily output is now 2000 tons. A pleasant surprise was given the Minnesota company the other day. Some foundation work was being done on the surface between two pits when a body of ore was unexpectedly found which contains at least 100,000 tons and probably twice that much.

The manager of the Western Car Service Association at Chicago says there will be by New Year's Day a shortage of 25,000 cars.

Fire-Proof Construction.

BY JOHN JAMES WEBSTER.

(*Continued from page* 829.)

A patent was obtained by Mr. Hornblower of Liverpool, in 1871 and 1873, for the fire-proof floor shown in Fig. 42. Wrought-iron rolled joists of a section suitable for the span and load are fixed 2 feet apart and incased in hollow skewbacks of fire clay; these are filled with concrete and a hollow brick of fire clay fills in the space between the skewbacks, forming a flat ceiling. The whole is then grouted with cement, and any flooring can be laid. Grooves are molded on the materials of the blocks to act as a key for the plaster of the ceiling. This system was adopted in the Manchester Pantechnicon and in the Liverpool Corn Exchange. The floor shown in Figs. 43, 44, 45 and 46 was patented by George Northcroft in 1876, and is somewhat similar to Hornblower's, the skewbacks and voussoirs being of a different form, specially designed to allow for expansion. The bricks are of various shapes, and are mutually supported by a series of projections fitting into each other. The joints of the bricks and skewbacks are radiated, the beds of the tongues and grooves being level, and the back-joints at right angles thereto; the bricks are set in mortar, cement or fire clay, but the girders are surrounded with an asphalt bedding, so that in case of overheating the asphalt would soften and allow free expansion and contraction. The ends of the joists and side skewbacks rest on a by high temperatures or by the application of water when heated. In addition to the shoulder on each face, they have a dovetail groove for the jointing cement to run in and form a key, the underside being also grooved to serve as a key for the plaster of the ceiling, should one be desired. This system has been applied at Whiteley's, the London Pavilion, large premises in Corporation street, Birmingham, and the National Provincial Bank. A floor having a span of 8 feet is laid at the tudinally by a number of holes, to decrease the weight of the floor. No plaster is used for the ceiling.

W. Lindsay, Jr., has devised a floor, the construction of which is shown in Fig. 49. It consists of hollow rectangular bricks with an internal rib, and joggled at the sides to enable each brick to support the one adjoining it; the underside is grooved to form a key for the plaster of the ceiling. The bricks are 2 feet long, 4 inches wide and 4½ inches deep, and can be

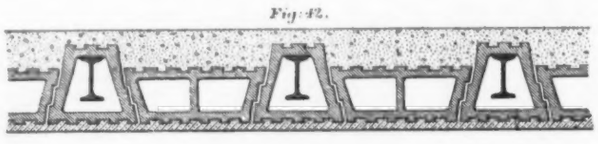


Fig. 42.

Hornblower.

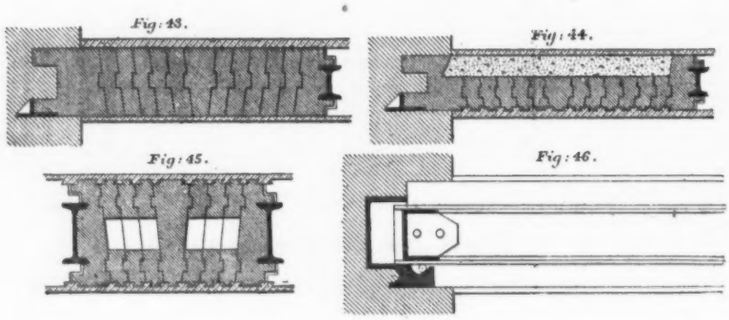


Fig. 43. Fig. 44. Fig. 45. Fig. 46.

Northcroft (Figs. 43 to 46 Inclusive).

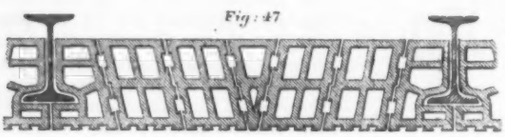


Fig. 47.

Doulton—Peto.

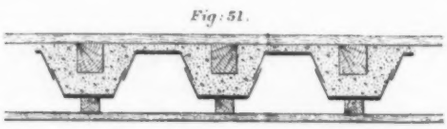


Fig. 51.

Trough Flooring.

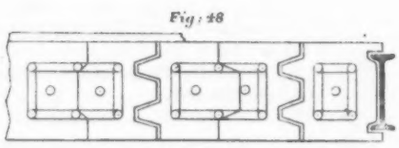


Fig. 48.

Blanchard.

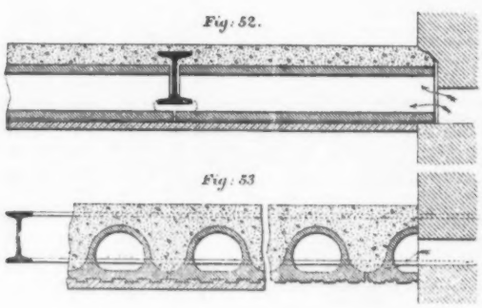


Fig. 52. Fig. 53.

Fawcett.

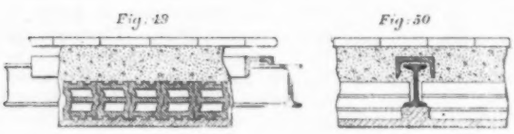


Fig. 49. Fig. 50.

W. Lindsay.

FIRE-PROOF CONSTRUCTION.

cast-iron bond-plate, forming a continuous tie round the building; shoes are cast to receive the end of the girders, which rest on balls or rollers to facilitate expansion. The ceiling is fixed by means of the grooves cast on the underside of the blocks. The intermediate space between the skewbacks and the center wedge brick may be either filled with concrete or left for ventilation.

Messrs. Doulton & Co. of Lambeth have introduced a form of flooring, Fig. 47, in which hollow skewbacks incase the joists or girders, the voussoirs consisting of hollow bricks having the sides parallel with the angle of the skewbacks. The bricks are made of a special fire clay which experiments have proved to be unaffected works of Messrs. Doulton, and has been submitted to the following severe experimental tests: It was loaded to the extent of about 5 hundredweight per square foot, and after a severe fire had been burning underneath for several hours a hose was turned on to it, with the result that the floor remained uninjured.

The floor, Fig. 48, made by M. H. Blanchard of Bishop's Waltham, consists of a series of blocks of terra cotta, fitted between iron or steel joists spaced about 2 feet 6 inches apart. The sides of the bricks are joggled, to fit into one another, and they are drawn and held together by means of tie rods passing through them and the joists. They are perforated longi- laid either to form an arch up to 9 feet span or as a flat soffit. In the flat construction the rolled joists are placed about 2 feet apart, the bricks resting upon either the top or bottom flange, concrete being laid upon the top. The bottom of the rolled joist is protected by a flat tile running longitudinally and supported by the ends of the bricks; and the top is covered by an inverted channel section tile of the same material as the bricks. The crushing strength of the bricks is stated by the maker to be 365 tons per superficial foot; in the flat construction they would, of course, be submitted to a transverse strain. The form called "trough flooring," Fig. 51, is constructed by both

W. H. Lindsay and W. Lindsay & Co. The troughs are fitted with pumice concrete, in which, to reduce the weight and to provide ducts for ventilation, earthenware pipes are imbedded. The ceiling can be formed either by securing wooden strips to the bottom of the trough to receive the lath and plaster, or by attaching to the lower flange inverted T-bars to receive earthenware tiles, or again by suspending concrete slabs by bolts from the top of the trough. This form of flooring is of great strength, and large spans can be covered without the use of main girders. Mark Fawcett has recently introduced the system shown in Figs. 52 and 53, which consists of tubular tiles laid diagonally on the lower flange of the iron or steel joists, placed 2 feet apart from center to center, being the diagonal of the tile at right angles to the joist. The bottom of the tile is flat, and flanged so as to touch the adjoining one, leaving a space above to receive the concrete. The ends of the tiles are joggled and rest on the joist, serving to protect the underside, but a space is left under the joist to form a free passage for the air. The concrete on the top bears directly on the joists, thus relieving the strain on the tiles, the underside of which is scored to form a key for the plaster of the ceiling. Floors on this system have been laid at the Children's Hospital, Great Ormond street, and the Albert Hall Mansions. The Pioneer Fire-Proof Construction Company of Chicago

Fig. 54.

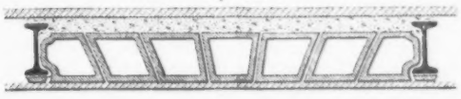


Fig. 55.

Fig. 56.

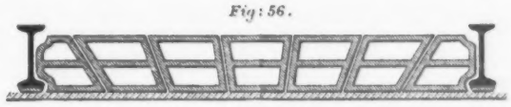


Fig. 57.

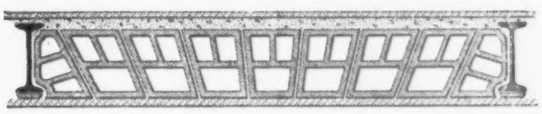


Fig. 58.

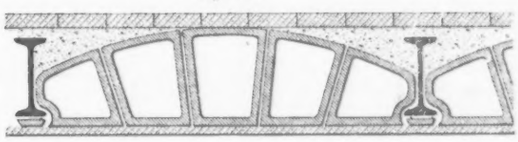


Fig. 59.

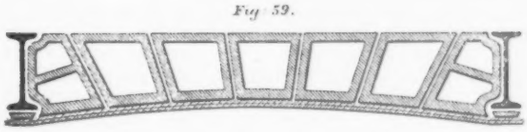
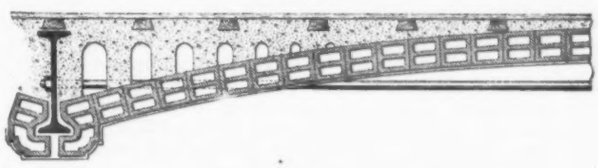


Fig. 60.



"Pioneer" Chicago (Figs. 54 to 60 Inclusive).

Fig. 61.

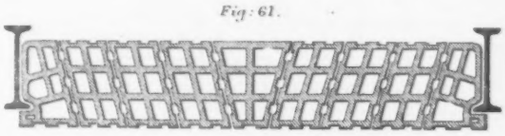
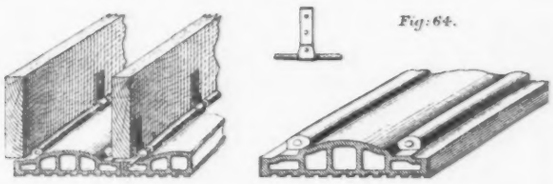


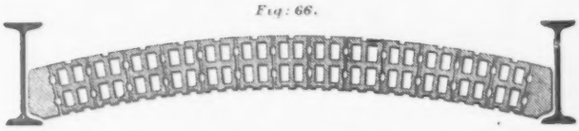
Fig. 62.

Fig. 63. Fig. 65. Fig. 64.



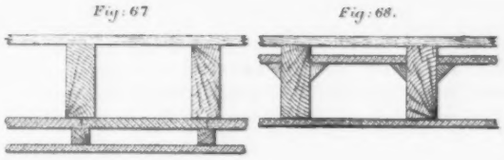
Maurer, New York (Figs. 61 to 65 Inclusive).

Fig. 66.



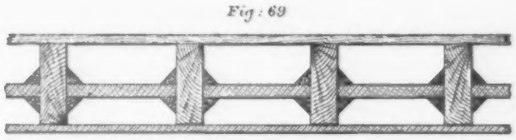
Raritan, New York.

Fig. 67. Fig. 68.



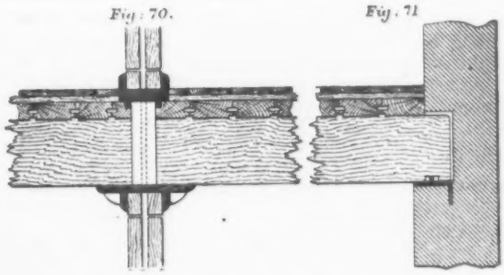
Anderson.

Fig. 69.



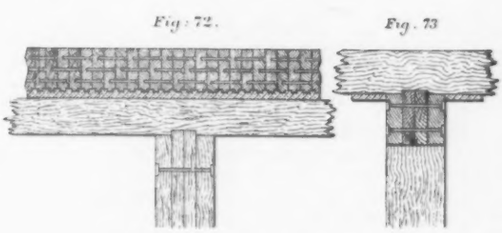
Wilkinson.

Fig. 70. Fig. 71.



American Slow Combustion.

Fig. 72. Fig. 73.



Evans & Swain.

FIRE-PROOF CONSTRUCTION.

have introduced the "hollow tile flat arch system," Figs. 54–60. The section of the bricks depends upon the depth of the floor, which is in turn governed by the span. In each case the bottom of the joint is protected by a longitudinal tile of the same material as the brick. In Fig. 60 the bricks are shown to form an arch of 20 feet span, the spandrels being filled in with concrete hollowed out for lightness. The thrust of the arch requires tie rods at intervals, and as these come below the soffit, they would, unless protected, be a source of danger during a fire. Iron tie rods, ¾ inch diameter, are also fixed in the flat arch system, bolted to the web of the girders at spans of from 8 to 10 feet. The following table shows the weights of the various floors and the size of the joists as given by the manufacturers:

Hollow Tile Floor Arches.

Depth of tile.	Description.	Maximum safe span.		Weight per square foot.	Sizes of iron joist.				Safe load per square foot.
					14 feet span.	18 feet span.	22 feet span.	26 feet span.	
In.	Fig.	Ft.	In.	Lbs.	In.	In.	In.	In.	Lbs.
6	54	4	10	23	6	7	8	10	250
6	54	5	6	29	7	8	9	10	250
6	54	7	6	40	9	10	10½	12	250
7	54	5	0	25	7	8	9	10	250
8	54	5	6	29	7	8	9	10½	250
9	54	6	0	33	8	9	10	12	250
10	55	6	0	37	8	9	10	12	250
10	56	6	6	40	9	10	10½	12	250
12	57	7	0	48	9	10	10½	12	250
5	60	15	0	28	....	....	....	....	.....
6	60	20	0	35	....	....	....	....	.....

Henry Maurer & Son, of New York, construct fire-proof floors on the system shown in Figs. 61–65, the bricks used being hard-burned fire clay, hollow, of equal vertical thicknesses, and laid in cement mortar to break joint alternatively. They have dovetail grooves in the side and bottom, to form a key for the cement and for the plaster of the ceiling. The following table, furnished by the manufacturers, shows the weight of the various floors, exclusive of the joists, the girders and joists being in all cases protected with the material:

Hollow Bricks for Flat Arches.

Depth of brick.	Maximum span.		Weight per square foot.	Safe load per square foot.
Inches.	Feet.	Inch.	Pounds.	Pounds.
6	4	0	29	1,000
7	4	6	33	1,200
8	5	0	37	1,400
9	6	0	40	1,500
10	6	6	43	1,500
12	7	0	48	1,800

The Raritan Hollow and Porous Brick Company of New York construct fire-proof floors either in flat or segmental arches, Fig. 66. The bricks are of hard-burned clay, and the iron work is protected by the skewbacks, being returned under the joists. Longitudinal grooves are molded in the faces of the bricks, to form a key for the cement and plaster of the ceiling. The following table gives the weights and safe loads:

Depth of brick.	Maximum span.		Weight per square foot.	Safe load per square foot.
Inches.	Feet.	Inch.	Pounds.	Pounds.
6	4	0	29	1,000
7	4	6	32	1,000
8	5	6	35	1,000
9	5	9	37	1,000
0	6	6	41	1,000
2	7	6	48	1,000

On comparing the tables of the last three manufacturers it is difficult to reconcile the great difference existing between the safe loads of floors of practically the same construction, the strength of one system being given as about four times that of another.

Having now described a number of the combinations of iron, concrete and brick, other methods of fire-proof construction may be briefly considered. Returning to the system of pugging, which is extensively adopted both in this country, in America and in France, the application of silicate cotton may be mentioned. Figs. 67 and 68 show the way in which it is used by Messrs. D. Anderson & Son. In the first arrangement silicate slabs are secured underneath the wooden joists by means of wooden strips, to which is fixed the usual lath and plaster ceiling. In the second arrangement fillets are nailed to the sides of the joists to receive boards which carry the silicate cotton either in the loose state or in slabs. In the first arrangement the joists are protected from fire underneath, and in the second on the top. By combining the two the protection is more perfect. Mr. Wilkinson, in addition to the arch made of his special concrete, has a system of pugging, Fig. 69, in which fibrous plaster is used. Fillets of wood fixed on the side of the wooden joists at about two-thirds of the depth down carry the slabs of fibrous plaster, a fillet of plaster being laid on the top.

In connection with the plastering of ceilings, walls, partitions, &c., it is advisable that some efficient key should be adopted for retaining the plaster in the event of its becoming wet. A patent was taken out by L. Leconte in 1841 for using wire netting instead of laths, but this had been previously done in the building of the Pantechnicon. A combination of wire netting and hoop iron is used to a great extent in America, and a system has been patented by Richard Johnson of Manchester, consisting of galvanized wire netting with ¾ inch or smaller meshes laid on strips of varnished hoop iron about ⅝ inch wide, fastened by special staples edgeways across the joists from 6 to 9 inches apart. This invention had a practical test in the large fire on November 5, 1889, at Messrs. Crabtree's Dye Works, Manchester, the superintendent of the Manchester Fire Brigade reporting that it stood the test of a fierce fire and of water satisfactorily, the damage being very slight.

Another ingenious form of wire netting is that invented by Mr. Golding of Chicago, and manufactured in this country by the British Expanded Metal Company, at West Hartlepool. It is made by cutting parallel slits in a thin bar or plate of iron and then expanding it. A net work is thus formed, the form of the meshes being governed by the distance apart of the slits. The author adopted this material in the plaster covering of the full-sized model of the Eddystone Lighthouse, designed by him for the Committee of the Royal Naval Exhibition, 1891, and erected in the grounds under his superintendence.

Solid Wood Construction.

There are many advocates of the solid wood system, and in America what is called the "mill construction," or "slow-burning construction," is extensively adopted. The principal features of this system are outside walls of masonry, or preferably of brick, concentrated in piers and buttresses, with thin walls containing the windows between; the floor and roofs are constructed of large timbers, covered with thick planking, the girders being supported by wooden columns, no furring or concealed spaces or anything which will conceal fire or allow dirt to accumulate being permitted. The floor beams are generally 14-inch x 12-inch hard pine timber resting upon 20-inch brick piers in the basement, and on wooden posts and the outer walls in the other stories. The beams have an air space round the end, as shown in Fig. 71, and are anchored to the wall by a cast-iron plate on which they rest, this plate having a projection which fits into a groove in the bottom of the beams. The upper edge of the beam is slightly rounded, so that in the event of its getting burnt it would fall without pulling down the wall. The floor consists first of 3 inch planks, not exceeding 9 inches in width, planed on both sides, grooved and tongued with hard wood. The nails are driven obliquely through the grooves in the planks before the tongues are put in. Upon the plank is spread ¾ inch of mortar to preserve the timber from decay, to prevent the floor from becoming soaked with oil, and to increase the slow-burning property of the construction. Above this is laid the upper floor of 1¼-inch boards. The columns are usually round, 9 inches least diameter in the first story, 8 inches in the second and 7 inches in the third, and are made of thoroughly seasoned hard pine or oak. A hole 1½ inches diameter is bored down the center of each column from end to end, with two transverse holes, each ½-inch in diameter, at the top for ventilation and the prevention of dry rot, as shown in Fig. 17. No timber is varnished or "filled" until three years after its erection for fear of dry rot. The cost of such a mill in the United States would be as follows:

Mill with three stories for machinery and basement for miscellaneous purposes.	75 to 80 cents per square foot of total floor arch.
Mill with two stories and no basement.	65 cents per square foot of total floor arch.
Mill with one story of about 1 acre of floor, with basement for heating and drainage only.	85 cents per square foot of total floor arch.

The solid wood system of Messrs. Evans & Swain is shown in Figs. 72 and 73. The flooring consists of solid wood joists, constructed of timbers varying in depth from 4½ inches in 8-foot spans to 11 inches in 30-foot spans. They are closely laid and spiked together alternately and rest on the wall direct, no plates being required. Before being fixed each joist has the two bottom edges cut with an angular groove, so that when two come together a dove-tail groove is made, forming a key for the plaster of the ceiling. The beams and columns are constructed in a similar manner, and when used for large spans are built up of smaller timbers. This system has been adopted with satisfactory results in large warehouses for the East and West India Docks, the London, Tilbury and Southend Railway Company, and Westminster Hall.

Columns.

As the metal of the columns would be affected either by intense heat, when it would collapse, or by water, when it might possibly crack, it is absolutely necessary that all columns should be protected.

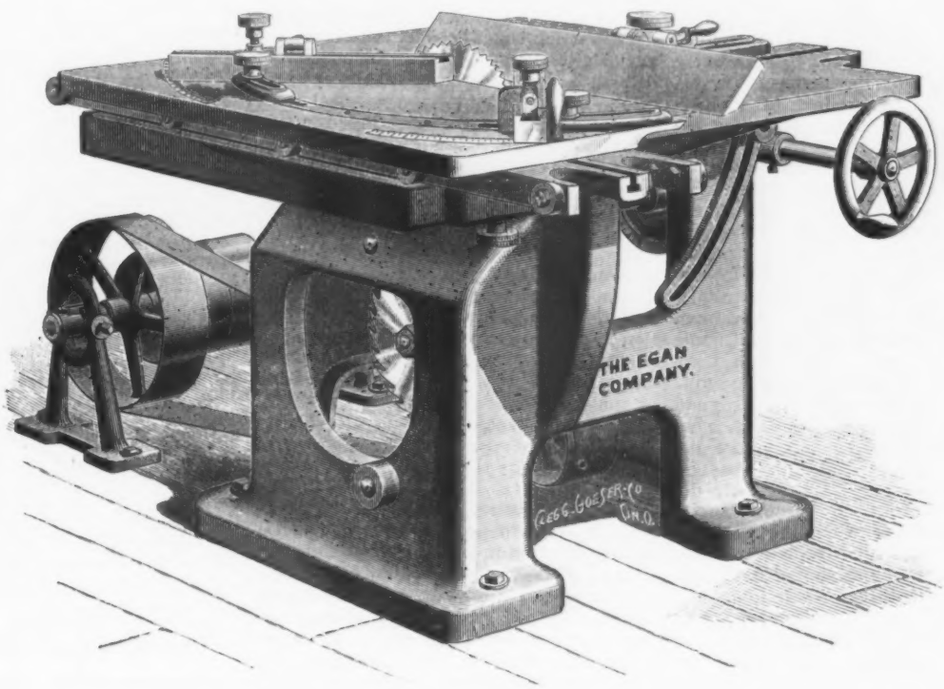
The paper then describes in brief a few of the methods of protecting columns, of erecting fire-proof partitions and the construction of doors and windows.

Alexander Pourcel, the well-known metallurgist, in an article contributed to *Le Génie Civil* on the Hoerde desulphurizing process, calls attention to the record of investigations bearing on the same subject made by Capt. H. Caron, chief of the Laboratory of St. Thomas d'Aquin. He presented a paper before the French Academy of Sciences on April 17, 1863.

A line of 100 oil tanks in the Pennsylvania region from Johnston's Station to Arden has an aggregate capacity of 4,000,000 barrels. At 16 cents per barrel the cost is $640,000.

Double Rip and Cross-Cut Saw.

The accompanying engraving represents a new double-rip and cross cut saw for edging, ripping and cross cutting, especially adapted for pattern makers and for accurate work. Its construction is very simple, and can be changed to suit the work desired in a very few minutes. The column is one entire casting, with the saw mandrel arranged to revolve around a common center inside the column, so that when the ripping saw is above the table the cut-off saw is below the table, and for grooving either saw can be brought above the table, according to the depth of groove to be cut. The table is of iron, made in two sections, both sections planed perfectly true, and the one at the left of the saw made to work back and forth on rollers for edging or cross cutting. There are two miter fences for cutting right and left, and one ripping fence, all accurately fitted to the table and in line with the saw. The mandrels are of steel, running in self-oiling boxes lined with babbitt and driven from a countershaft placed clear of the column. The saw is made by the Egan Company of Cincinnati, Ohio.



DOUBLE RIP AND CROSS-CUT SAW.

Engine Castings in the New Cruisers.

In the designs of the engines for the new cruisers now building the inverted Y frames and bed plates were to be of cast steel. This design has been changed in some of the ships, the Cincinnati, Raleigh and New York, and cast iron substituted for steel. The cast iron used is of a very superior quality, being made of a mixture of gun iron and other grades in proportions that were shown by experiments to give the best results. The outcome has been that the frames are good solid castings, but they exceed the weight of equivalent of steel frames by about 40 per cent. The Y frames for the Texas were successfully made of cast steel. For the engines designed later than those mentioned cast steel has been retained for the Y frames, the design of the frame having been simplified as far as possible with a view to decrease shrinkage strains. In some cases each frame is made in two parts, to be bolted together. The joint is vertical, along the vertical leg of the Y.

The bed plate castings have been successfully made in cast steel. These bed plates for the engines of the inverted direct acting type consist of two I beams separated by the width of the engine bed. They are united by cross beams of approximate I section, which form the supports for the crank shaft brasses. The flanges of the I section are stiffened where required by webs. For the three-cylinder engines the bed plate is made in three sections, united by flanges and bolts, the largest section weighing in the rough about 13,000 pounds. Cast iron instead of cast steel is used for the cylinder heads. Fair success has been had with cast-steel pistons, but blowholes occur sometimes at places where sound metal is necessary for proper fitting where perhaps the strength is not effected to an appreciable extent. The pistons are of the regular marine pattern—that is, conical disks with varying thickness from base to apex. As an example of the work done in composition castings we may cite a section of a condenser for an engine of 7000 indicated horse-power. The casting is a cylinder with flanged ends. It is 4 feet long, 6 feet 8 inches in diameter and ½ inch thick. It was cast in one with the nozzle for the exhaust pipe. In places where extreme lightness is necessary, and where strength, absolute solidity and uniformity of metal is required in a body irregular in form, such as the valve crossheads on engines fitted with double piston valves, good results have been obtained with manganese bronze.

The low-pressure cylinders of Cruiser No. 6, building at San Francisco, are good examples of the work being done in cast iron. The cylinder, the working bore of which will be 92 inches in diameter and will allow a stroke of 42 inches, was cast in one with its double valve chests, each chest providing for double piston valves 18 inches in diameter. Experience abroad has shown that in the making of complicated engine castings in steel the skill of the workman is one of the largest factors. Just what the proportion of wasters is there for any new pattern we don't know, but long before our pile of them is as large as that across the water there will be no lack of perfect work.

Disappointment in Southern Trade.

There is much complaint of depression at the South, owing to the low price of cotton and the collapse in land booms. The volume of trade is noticeably reduced even in the most prosperous sections, and collections are slow. Notwithstanding the immense cotton crop last season, the planters have little money, and collections only in exceptional instances are reported as better than "fair." This scarcity of ready money is due to natural conditions—namely, the low price of cotton and the higher prices for grain and provisions. There has been throughout the fall the utmost conservatism shown in purchasing stocks. To prevent the evil of overproduction, out of which this business depression has grown, and at the same time to promote a more uniform prosperity in the cotton-growing States, it is proposed that the planters should hereafter reduce the average of cotton planting and turn more attention to the cultivation of cereals; that is, diversify their crops. Similar recommendations under similar prevailing circumstances have been made many times before. The difficulty, however, in the way of its general adoption is found in the fact that each planter, knowing that it is generally more profitable to raise cotton at home and buy corn abroad, will encourage the adoption of the recommendation by his neighbors, but will not practice it himself. Only in a few instances does it appear that the South suffers from too much expansion of its manufacturing interests.

The Mexican Government has entered into a contract with William Pritchard for the construction of a port and harbor work at Coatzacoalcos, in the State of Vera Cruz, in the sum of $4,500,000. The improved harbors on the Atlantic Coast are probably intended to compete with Tampico, on the Gulf, where new works are just finished.

STEEL CAR AXLES.—II.

BY P. KREUZPOINTNER, ALTOONA, PA.

What is the Proper Grade of Steel?

At this point of our inquiry the question naturally arises: What shall we consider the proper grade of steel for car axles? From the standpoint of mere strength it would seem that a tensile strength of from 75,000 to 85,000 pounds per square inch and 18 to 20 per cent. elongation in an 8-inch section would answer the purpose very well. The lowest permissable limit should not be less than 72,000 pounds per square inch and 18 per cent. elongation in an 8-inch section, the upper limit of strength not more than 90,000 pounds per square inch in 8 inches. It would be quite erroneous and misleading, however, to assume that this measure of quality will secure always the most suitable metal.

As pointed out before in these columns when discussing contraction as a quality measure,* two widely different metals of the same class may have the same tensile strength and elongation, and be sufficiently near each other in quality to pass the specifications. Thus the product of A, B, C and D may be good according to our established standard, and yet one or two of these four products may turn out to be dissappointing in practical service. To save us many perplexities in this respect the elastic limit should form a measure of quality in our inquiry into the proper grade of steel for car axles. An engineer never expects to have his structure strained beyond the elastic limit, much less broken at the ultimate strength. Moreover, while stresses applied to a metal within the yield point, but beyond the elastic limit, will raise the elastic limit and the yield point (at the expense of ductility, however), a stress, straining a structure beyond the yield point, will injure it beyond redress, and even may cause speedy destruction, according to circumstances. Hence the importance of making the elastic limit a measure of quality for our metal. Generally speaking, this should be 40,000 pounds per square inch, or about one-half of the ultimate strength. By this is meant the primitive or natural elastic limit, and not the yield point or the elastic limit artificially raised by cold rolling or cold hammering. Such an artificially produced elastic limit is apt to be lowered by the frequent heating of the journal or alternating and opposing stresses.†

The reason for paying particular attention to the elastic limit of steel for car axles is quite plain. The variation of stresses and the force exerted by the violent blows and shocks to which car axles are subjected are somewhat uncertain quantities. Hence we must have a safe margin to provide for the unknown excess of destructive force. That axle will therefore be the best and safest which will not be strained beyond the elastic limit in everyday service. The best grade of steel, therefore, for a car axle is the one which is hard enough to resist the heaviest blows, but with enough ductility or "flow" in the metal to yield some—to "cushion" the blow, as it were. If the metal is too high in strength it will lack the necessary ductility, the necessary yielding property, the ability to act like a spring in case of emergency; and a sudden fracture may be expected, especially if, in addition to hardness, the metal is afflicted with mechanical defects of some kind. On the other hand, if the metal is too soft, has too low an elastic limit to successfully take up the maximum stresses an axle has to sustain, then the metal will soon become "fatigued;" and as the periods of rest necessary for the metal to recover its former elasticity in all probability are too short to have any decided effect in that direction, the metal will ere long be in an overstrained condition permanently and detail fracture is the result.

Thus, again, do we perceive the importance of a high primitive or natural elastic limit in a car axle. To the want of appreciation of the importance of this most essential factor in the life of a car axle is probably due a good deal of the disappointing experience in the use of steel for axles. So much more was expected of steel by the enthusiastic engineer, simply because the name "steel" was associated in peoples' minds so closely with superior strength and qualities, that its character was not sufficiently looked into in the beginning, and, as in most cases of overconfidence, unwarranted distrust followed.

The Tensile Test.

It is quite possible that much trouble and disappointment has arisen from placing too much confidence in the results of a tensile test, assuming that the calculated stresses are all operating within the safe limit. If we would have to deal with stresses acting only in one direction this would be a safe assumption. However, the stresses operating to destroy a car axle are not only of varying intensity, but act in opposite directions. Thus a transverse thrust is followed by a violent torsional strain, to be immediately succeeded by the lurching of the truck of a heavy-loaded freight car, which gives a blow to the axle, setting every molecule into violent vibration in every direction. These alternating stresses are very detrimental in their effects and require special consideration by the engineer.

Tresca of France, when speaking of the general law of the flow of metals says: "When pressure is exerted upon the surface of any metal it is transmitted in the interior of the mass from particle to particle, and tends to produce a flow of metal in the direction in which the resistance is least." Following up this law of the flow of metals and applying it practically to our steel car axle, we find that if the pressure exerted to set the molecules in motion in the direction of least resistance was greater than the primitive elastic limit, a permanent set will have taken place. This means a rearrangement, a settling permanently into a new position of the molecules which have been set flowing and moving by the shock, blow or excessive stress of some kind, while the car bumped over a rough place in the road. To the wide-awake engineer and metallurgist a permanent set means, therefore, practically a new structure in the axle, a shoving together of the particles composing the mass of the steel with a corresponding degree of greater density, which greater density, by the way, means an increase in elastic limit and ultimate strength, because a pressure or force strong enough to produce a permanent set, resulting in a greater density of the metal, is just like so much work expended on the axle by hammering or rolling the same, and we all know that work increases the strength and elastic limit of steel. How much, was beautifully illustrated in Braun's experiments "On the Effects of Work on Steel."*

The consideration of the foregoing shows us incidentally how the elastic limit and ultimate strength may be and often is raised in a structural material during service. If the stress or pressure would always act in the same direction in an axle, then the flow of the molecules would also be in one direction, and the mass of the steel would become denser with every excessive stress straining the metal beyond the elastic limit. But the varying stresses acting on a car axle set the molecules flowing in one direction at one minute and in another direction the next minute. The consequence is that, if the stress or pressure were greater than the primitive elastic limit, the molecules flowing in one direction had hardly settled in their new position when a stress or pressure acting in the opposite direction makes the molecules flow back again in that direction. Thus the molecules in a car axle subjected to alternating and opposing stresses do not come to rest easily.

Bearing in mind the foregoing explanation of action and reaction continually affecting the molecular condition of a car axle during service, we can understand why, if these important factors were left out of consideration by the engineer, disappointment was the result of using steel for axles. Woehler found, as a result of his researches on the fatigue of metals, that the ratio of safe strength in two structures, one of which is subjected to stresses acting in one direction only, and another one subject to stresses acting alternately in different directions, is like nine to five. The proper consideration of these very important factors serves to illustrate the great importance of a high primitive elastic limit in car axles, not one artificially raised, to begin with, by "doctoring" the steel.* Likewise it explains why a simple tensile test does not fulfill its mission entirely when we have to decide on a metal which will be subjected to alternating stresses.

While speaking of the proper grade of steel for car axles one more property may be mentioned such steel should possess. It is the property of the crystals assuming an amorphous condition under excessive stress or when getting hot. The best and finest grades of boiler and axle steel get fibrous when strained excessively or when heated. Thus nature provides a means of safety by interposing toughness when conditions tend to make mere strength or hardness more or less inoperative. Woehler, Spangenberg and Martens have called the engineers' attention in that direction, while Ritter von Kerpeley, in his "Merkmale des Stahles," gives direct evidence of this phenomena.

Effects of Heat and "Work."

This phenomenon, described by Ritter von Kerpeley, of steel flowing more or less at a given point of heat, that ability or degree to flow depending on the temperature at which the steel was cast and on the percentages of carbon, manganese and silicon and the form in which these elements appear in the steel, is evidently identical with the researches of Osmond, Brinell and Barba. Ritter von Kerpeley claims that that steel will be the most suitable for structural purposes, which under pressure (stresses and strains) and heat comes nearest to the nature of wrought iron.

Under heat, he means, in this connection, not only the red heat, but considers the heat created by pressure and strain already sufficient to cause a change in the structure of the steel. That is to say, the quality or value of steel for a given purpose depends on the degree of structural change taking place in the steel at a low and increasing heat. For structural material which is liable to be subjected to heating by stresses and external friction, like in a car axle, we want a metal which assumes an amorphous or so-called fibrous condition at that critical period of its life when safety depends as much on the ductility of the steel as on its strength. If an axle begins to run warm in service we know that the heat thus generated will

* *The Iron Age*, December 18, 1890; January 22, 1891.

† "Defining the Elastic Limit," *The Iron Age*, Nos. 12 and 13, March 19 and 26, 1891.

* *Stahl und Eisen*, No. 1, January, 1883.

* *The Iron Age*, Nos. 12 and 13, March 19 and 26, 1891.

set the molecules or crystals in motion. The structure of the mass will be loosened in a degree as the heat increases. At the point of "blue" or "black" heat the molecules of the steel seem to be, in its extreme state of disassociation or disconnection, in a state of chaos before rearranging themselves into new positions brought about by a higher degree of heat. Hence the brittleness of steel at that point of heat, due to a minimum of cohesion of the molecules at that point. Now if the cohesion is impaired most at the point of "blue" heat there must be a beginning of the impairment of the cohesion of the molecules somewhere between the points of maximum tensile strength, when the steel is cold, and minimum strength, when the steel is at the point of "blue" heat and "white" heat. If, then, when an axle begins to run warm, the individual crystals of the steel assume an amorphous condition, then the mass of the steel will in that state present the appearance of being fibrous, though there is no such a thing in steel like fibers in the sense as we speak of fibrous iron. This amorphous or fibrous state, however, counteracts the tendency of the heat to impair the cohesion. Thus what the steel loses in absolute strength it gains in toughness. On the other hand, if the steel does not assume that amorphous or fibrous condition described, then the impaired cohesion of the molecules permits a comparatively easy separation of the individual crystals and even a moderate blow or shock will cause fracture.

As an illustration, Kerpeley mentions the practice followed at the Imperial Austrian Mint, where the steel intended for the dies is subjected to a heat fracture test to ascertain whether the steel, besides possessing the required ductility, is not liable to structural changes under the influence of the heat generated in the die during the process of stamping the money. Incidentally the foregoing illustrates the great desirability of having steel with a fine "grain" for axles, since such steel not only is denser, which means greater cohesion, other things being equal, but a small-sized structure turns more readily into an amorphous state.

Osmond's and Brinell's researches on the change of texture in steel have given us the key to a better understanding of the phenomena described by Kerpeley and observed by the writer. From all that is known now on this subject it is pretty evident that under the influence of heat (heat created by the friction of the molecules upon one another when the metal is subjected to pressure, or heat created by the friction of two surfaces upon each other, or, lastly, heat caused by extraneous agents, like fire) the chemical elements in the steel, especially the carbon, undergo certain changes, assume certain forms, which, though their exact character is undefinable by chemical analysis nevertheless have a very important bearing on the quality and behavior of the steel in service.

We all know that even in the low heat of boiling water hardened steel will eventually lose its temper as though it had been annealed to red heat, with the only difference that in the one case more time is necessary to accomplish what in the other case a higher degree of heat accomplishes in a short period. Changes of temperature in the steel, however, produce changes of texture. Under certain favorable conditions a certain degree of heat may even affect steel analogous to the effects of hammering on metals, producing a fine texture, as Caron, Osmond, Brinell and Barba have demonstrated in their well-known experiments.

The jetties in Tampico harbor are practically complete and there is a main depth of 20 feet of water their entire length.

Proposed New French Tariff.

We conclude this week the list of articles with duties (per 100 kg.) proposed in the new French tariff. (The first column of figures shows the maximum and the second the minimum rate):

	f. c.	f. c.
Detached pieces in cast or wrought iron and steel other than the component parts of steam boilers:		
In cast iron, turned, filed or adjusted, weighing 1000 kg. or upward	18 0	12 0
In cast iron, turned, filed or adjusted, weighing 200 to 1000 kg.	20 0	15 0
In cast iron, turned, filed or adjusted, weighing less than 200 kg.	25 0	20 0
In wrought iron or wrought steel, drilled, turned, filed or fitted, weighing 300 kg. or more	20 0	12 0
In wrought iron or wrought steel, drilled, turned, filed, or fitted, weighing from 100 to 300 kg.	25 0	15 0
In wrought iron or wrought steel, drilled, turned, filed, or fitted, weighing less than 100 and more than 1 kg	40 0	25 0
In wrought iron or wrought steel, drilled, turned, filed, or fitted, weighing 1 kg. or less	50 0	35 0
Forged steel springs for carriages, wagons and locomotives, unpolished.	18 0	12 0
Detached pieces, rough or worked, of pure copper or alloyed with any metal, cast in molds, weighing 10 kg. and upward, rough	25 0	15 0
Detached pieces, rough or worked, of pure copper or alloyed with any metal, cast in molds, weighing 10 kg. and upward, worked	30 0	25 0
Detached pieces, rough or worked, of pure copper or alloyed with any metal, cast in molds, weighing less than 10 kg., rough	20 0	15 0
Detached pieces, rough or worked, of pure copper or alloyed with any metal, cast in molds, weighing less than 10 kg., worked	50 0	40 0
Detached pieces of two or more metals such as pig iron, wrought iron, copper, pure or alloyed with any metals, weighing 300 kg. and upward	20 0	15 0
Detached pieces of two or more metals such as pig iron, wrought iron, copper pure or alloyed with any metals, weighing from 50 to 300 kg.	30 0	20 0
Detached pieces of two or more metals such as pig iron, wrought iron, copper pure or alloyed with any metals, weighing 50 kg. and less	40 0	30 0
Detached parts of dynamo-electric machines, such as full or empty bobbins surrounded with insulated copper; worked pieces in copper weighing less than 1 kg. numbered and marked, adjusted together or dismounted, for electrical apparatus; also regulating arc lamps	100 0	75 0
Various work in metal:		
Tools, hafted or not, in iron	18 0	12 0
Tools, hafted or not, in steel or iron faced with steel	25 0	20 0
Tools, hafted or not, in copper	35 0	30 0
Type, new	9 0	8 0
Type, old and worn out	4 0	3 0
Blocks with or without designs	free	free
Plates and coins engraved for printing	free	free
Cloth, metallic, in iron or steel composed of wire more than 2 mm. diameter	12 0	8 0
Cloth, metallic, in iron or steel composed of wire more than 1 and not exceeding 2 mm. diameter	16 0	11 0
Cloth, metallic, in iron or steel, composed of wire 5-10 mm. and up to 1 mm	20 0	13 0
Cloth, metallic, in iron or steel, composed of wire less than 5-10 mm	30 0	21 0
Cloth, metallic, in copper or brass, ordinary	30 0	20 0
Cloth, metallic, in copper or brass, for paper machinery	150 0	100 0
Netting in iron or steel, the sides of the meshes being 25 mm. or upward	15 0	10 0
Netting in iron or steel, with meshes less than 25 mm	18 0	12 0
Sheets, perforated, in iron, steel, copper, brass, zinc or other metals, with perforations numbering at the least 500 to the square metre	Usual rate as for the respective plain metals plus 10 fr.	
Needles for sewing by hand or machine, less than 5 cm. long	300 0	250 0
Needles for sewing by hand or machine, 5 cm. and more.	175 0	150 0
Needles shaped and articulated for looms	400 0	300 0
Needles for knitting and other analogous objects in steel, iron or copper	25 0	15 0
Pins in brass or iron, tinned	70 0	50 0
Pins, in steel, without heads	150 0	110 0
Clasps for robes, in iron, lacquered or tinned, or brass, yellow or white	70 0	50 0
Fish hooks	140 0	100 0
Feathers in metal other than gold or silver	160 0	120 0
Cutlery, common, kitchen knives, butchers' knives, tailors' scissors and secateurs	30 0	20 0
Razors, common	60 0	40 0
Clasp knives and ordinary scissors	100 0	60 0
Fine	600 0	480 0
Table knives with ivory or pearl handles	800 0	600 0
Cylinders in copper or brass for printing, engraved or plain.	20 0	15 0
Statues in metal of life size or less	Same rate as for the metal of which composed.	
Works in cast iron, not turned or polished:		
Railway chairs, plates or pieces cast in the open	3 0	2 50
Straight cylindrical pipes, girders and columns, solid or hollow, gas retorts, furnace bars and other similar objects roughly cast	4 0	3 50
Castings for mechanical purposes or heavy ornamentation, weighing more than 50 kg. per piece	6 0	4 0
Castings for mechanical purposes or heavy ornamentation, weighing from 5 to 50 kg.	7 0	5 0
Castings for mechanical purposes or heavy ornamentation, weighing less than 5 kg.	8 0	6 0
Pottery (imitation ?) articles for stoves and other goods not specified above	5 0	4 0
Works in cast iron, tinned, enameled, lacquered or rendered inoxidizable	15 0	10 0
Malleable cast-iron articles, articles in cast iron or steel weighing more than 3 kg.	12 0	8 0
Malleable cast-iron articles, articles in cast iron or steel weighing from 1 to 3 kg	20 0	15 0
Malleable cast-iron articles, articles in cast iron or steel weighing 1 kg. and less	25 0	18 0
Iron foundry:		
Constructions in iron or steel; pieces for bridges, fixed or movable; for frameworks of buildings, for lock gates, for hoisting appliances, and generally all pieces composed of one or more complete parts, pierced or adjusted or fixed together with rivets or bolts; each component part weighing at least 5 kg. per lineal m.	12 0	9
Small work, not denominated, in iron or steel; pieces for railings, barriers, awnings, conservatories, kiosks, verandas, window frames, casements, shutters, and in general all pieces composed of one or more complete parts, pierced or adjusted or fitted together with rivets or bolts; each component part weighing less than 5 kg. per lineal m.	15 0	10 0
Carriage iron work, and specially iron work for railway rolling stock	15 0	10 0
Locksmiths' work:		
Locks, padlocks, keys, bolts, hinges, latches, sliding bolts, and all other similar articles in iron, whether fettled or not fettled, turned, filed or polished, such as fittings for furniture, doors or window sashes	20 0	15 0
Similar articles partly made of copper or brass or wholly of copper or brass.	25 0	20 0
Anchors, cables and chains:		
Used in the ports and roads of France pursuant to the law of July 2, 1836	0 25	0 25
Cables of iron or steel wire, also barb wire, wires of 5-10 mm. and upward in diameter	15 0	11 0
Cables of iron or steel wire, also barb wire, wires of less than 5-10 mm. diameter	30 0	21 0
Anchors, buffers, drawhooks and chain cables in iron and steel	12 0	8 0
Busks and springs for dress, in steel, polished or lacquered, but not made up	30 0	25 0
Umbrella frames without sticks	40 0	30 0
Nails:		
Weighing more than 20 kg. per 1000	9 0	6 0
Weighing more than 5 kg. but not more than 20 kg. per 1000	13 0	9 0
Weighing 5 kg. and less per 1000	19 0	14 0
For shoeing animals	20 0	15 0

	f. c.	f. c.
Tubes of iron or steel—(*cont.*)		
Of iron or steel wire, machine made, whether plain or coated with tin, copper, zinc or coal tar, more than 2 mm. diameter	15 0	8 0
Of iron or steel wire, machine made, whether plain or coated with tin, copper, zinc or coal tar, more than 1 mm. and not exceeding 2 mm	20 0	11 0
Of iron or steel wire, machine made, whether plain or coated with tin, copper, zinc or coal tar, of 1 mm. and less	35 0	24 0
Screws, ringbolts, hinge hooks, iron hooks of all diameters, with screws and without; bolts, rivets and nuts in rough iron, as well as all articles pertaining to the bolt and screw trade not specified	20 0	14 0
Tubes of iron or steel:		
Formed by pressure or rolling, but not welded, 9 mm. internal diameter and upward	12 0	9 0
Formed by pressure or rolling, but not welded, less than 9 mm	21 0	14 0
Drawn hot and welded and formed by simple pressure, 9 mm. internal diameter and upward	13 0	10 0
Drawn hot and welded and formed by simple pressure, less than 9 mm.	24 0	18 0
Formed by lap or scarf welding	24 0	18 0
Flush joints of all kinds	24 0	18 0
Weldless tubes drawn cold of an internal diameter of 10 mm. and upward, if in soft steel	50 0	40 0
Weldless tubes drawn cold of an internal diameter of 10 mm and upward, if in cast or tempering steel	100 0	80 0
Weldless tubes drawn cold in soft steel or tempering steel of an internal diameter of 9 to 5 mm	225 0	200 0
Weldless tubes drawn cold in soft steel or tempering steel of an internal diameter of 5 to 2 mm	550 0	450 0
Weldless tubes drawn cold in soft steel or tempering steel, 2 mm. or less	5,000 0	4,000 0
Household utensils and all articles in iron, steel or black sheet not specified:		
If not painted, polished or turned	17 0	14 0
Painted or polished	21 0	16 0
Lacquered	24 0	18 0
Enameled, tinned or plain	30 0	25 0
Decorated in gold or printed in colors	40 0	35 0
Coffee mills with boxes of wood, cast iron or sheet iron; articles of kitchen use; meat presses, mincers, confectionary presses, small pumps, &c.	20 0	16 0
Inodorous water closets and flushing cisterns	17 0	13 0
Saddlers' ironmongery in malleable cast iron or cast steel	35 0	20 0
Objects in pure copper, or copper allied with zinc or tin:		
Boilersmiths' work, copper tubes in pure copper or copper alloys, copper rivets and pins (except knitting needles)	30 0	20 0
Objects of art and of ornament and other articles, including Cloisonné enamels	60 0	40 0
Lamps and braziers' work, formed by the association of various metals with copper in a pure or alloyed condition, browned, polished or lacquered	60 0	45 0
Other articles not specified	50 0	40 0
Pipes and other articles in lead of any kind	4 0	3 0
Electric accumulators	17 0	13 0
Hollow ware and other work in pure tin or allied with antimony	40 0	30 0
Zinc goods of all kinds:		
Plain or stamped	12 0	8 0
Polished, nickeled, lacquered and for lamp work	30 0	20 0
Printed in colors, decorated or gilded	50 0	40 0
Objects in nickel allied with copper or zinc (German silver) or formed of nickel-coated metals	150 0	100 0
Arms and ammunition:		
Portable military weapons of regulation pattern or as used in other countries	600 0	500 0
Weapons of commerce:		
Side arms	50 0	40 0
Fire arms, muzzle-loading sporting guns	300 0	240 0
Fire arms, breech-loading sporting guns, with pin fire	450 0	350 0
Fire arms, breech-loading sporting guns, central fire and outside hammers	900 0	800 0
Fire arms, breech-loading sporting guns, central fire and inside hammers; also all guns not included in the above categories	1200 0	1000 0
Shooting-gallery guns, carbines, pistols, revolvers, walking-stick guns	600 0	500 0
Gun barrels and parts of guns rough from the forge	75 0	60 0
Groups of parts assembled together other than roughly forged pieces, such as breech-loading barrels, locks, trigger guards, &c.	Same duties as for the arms to which these parts apply.	
Parts not assembled other than pieces rough from the forge	1,200 0	1,000 0
Guns mounted on carriages and carriages themselves:		
In bronze or copper	Same duties as for bronze or copper	
In steel	As for steel goods.	
In cast iron	As for cast-iron goods.	
In wrought iron	As for wrought iron goods.	
In wood	As for similar wood goods.	
Gunpowder	prohibited	
Dynamite	*0 50	*0 50
Percussion caps of fulminating powder:		
For military use	prohibited.	
For sporting purposes including amorces or detonators for mines	80 0	75 0
Cartridges for military purposes, loaded	prohibited.	
Cartridges for military purposes, empty	80 0	75 0
Cartridges for military purposes, for rifle practice	50 0	43 0
Cartridges for sporting purposes, loaded	prohibited.	
Cartridges for sporting purposes, empty	80 0	75 0
Fuses for miners, ordinary	35 0	30 0
Fuses for miners, in form of ribbon or tape	50 0	45 0
Fuses for miners in gutta-percha	80 0	75 0
Fireworks for amusements	125 0	100 0
Velocipedes, and parts thereof	250 0	220 0
Railway carriages of normal gauge, first and second class passengers	20 0	16 0
Railway carriages of normal gauge, third-class passengers	14 0	11 0
Railway goods wagons	11 0	9 0
Tram cars	20 0	16 0
Railway carriages for narrow-gauge lines	25 0	20 0
Goods wagons, for narrow-gauge lines	12 0	10 0
Tram cars, for narrow gauge lines	25 0	20 0
Bodies, or parts of carriages or wagons for rail or tramways	20 0	16 0
India rubber or guttapercha goods:		
Sheets of rubber, pure non-vulconized, and strips of rubber vulcanized	60 0	40 0
In elastic tissue	225 0	175 0
Attached to textiles	250 0	200 0
Belts, tubes, valves and other work in rubber or gutta-percha, pure or mixed with other substances, soft or hard, and combined or not with textiles or other material	90 0	70 0
Asbestos goods, pure or in combination with textiles or minerals	70 0	50 0

The regular meeting of the Engineers' Society of Western Pennsylvania was held on the evening of the 16th inst. at the rooms of the Academy of Science in that city. Col. T. B. Roberts presided. The paper for the evening was read by Capt. A. E. Hunt of the well known firm of Hunt & Clapp, proprietors of the Pittsburgh Testing Laboratory. His subject was "Hydraulic Cements." The paper comprised data collected from many sources pertaining to cements. It recited at length the chemical composition of cements and their different properties under different conditions. A brief discussion of the subject followed the reading of the paper. Before the meeting adjourned the chairman appointed a committee of three to nominate officers for the ensuing year at the next meeting. On motion of H. J. Lewis, a committee of three, consisting of H. J. Lewis, E. Swanson and A. E. Hunt, was appointed to arrange for holding a banquet. This committee was instructed to report at the next meeting.

Low water in the northern lakes and in the St. Lawrence River impedes navigation and begins to cause some anxiety. Low water is causing many mills to run on short time or to shut down altogether. The large manufacturing concerns at Lowell, Fall River and Manchester are depending almost entirely on their steam power.

* Exclusive of taxes in the interior of the country.

Bending Rolls Built by Wm. Sellers & Co. (Incorporated).

[*With Supplementary Page of Engraving.*]

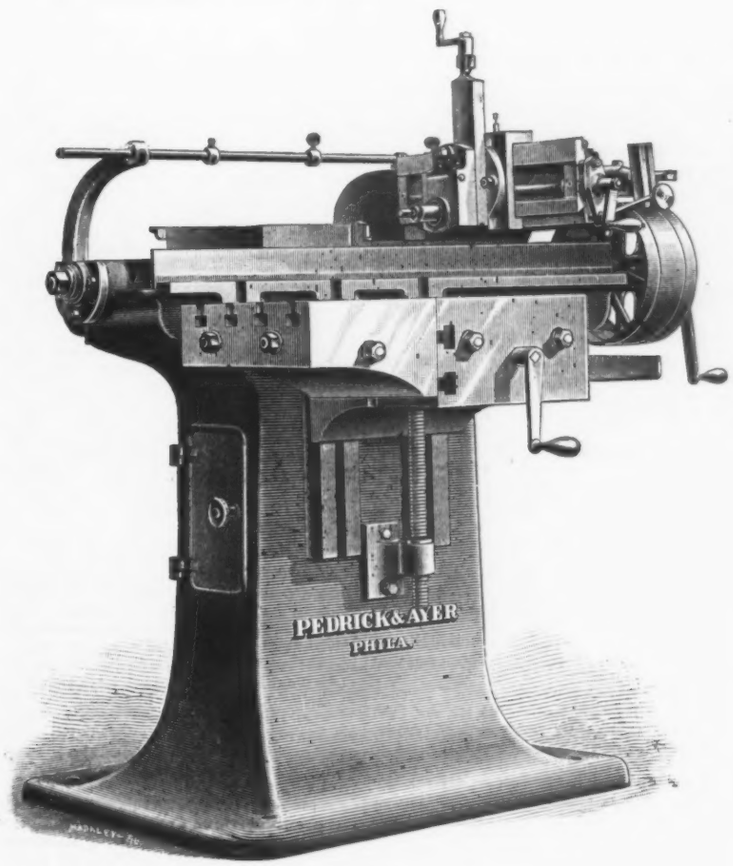
The bending rolls shown in the accompanying engraving were designed and built by Wm. Sellers & Co. (Incorporated) of Philadelphia, for the United States Navy Yard, Boston, Mass. The arrangement consists of four forged rolls. The top and bottom pinching rolls are 24 inches diameter, and the side rolls are each 20 inches diameter, fully capable of bending cold mild steel plates $\frac{3}{4}$ inch thick to a radius of 15 inches for the full length of rolls. The pinching rolls are adjustable to pinch plates from $\frac{1}{16}$ inch to 2 inches in thickness, and sufficient power is provided to bend $\frac{3}{4}$-inch plates to the above radius and full length at a single pass. Both pinching rolls are driven at the same peripheral speed; the lower pinching roll and both side rolls are arranged to be raised and lowered by power. The side rolls may be inclined to bend plates in wind, the difference of the elevation of the two ends being 17 inches. The operations of driving the pinching rolls and of adjusting the lower pinching rolls and the bending rolls are accomplished by two independent reversing vertical engines, each controlled entirely by one lever. The roll or bearing to be moved is determined by positive toothed clutches operated by convenient hand levers. The housings are of new design in which a heavy plate is made to cover on one side the slots for the roll bearings, and thus firmly unite and brace together the ends which would otherwise be partly detached by the slots. The bearings for the top roll are attached to the main housing by long steel bolts, thus forming between these parts elastic members which will stretch if too great a strain should come upon the rolls, which is possible to occur from attempting to bend too close to the edge of a thick plate, and in this event the worst could only result in the breaking of one or more of these bolts, which can be repaired or replaced with the ordinary facilities of the user in a very short time. Or if any of the rolls should be broken this same feature permits the removal of any or all of them without the necessity which exists in all other bending rolls heretofore constructed of taking the whole machine apart. The driving and elevating machinery at each end of the rolls is carried between the main housing and an auxiliary stand attached thereto, thus supporting the journals for the driving gears on both sides of the gears and providing large bearing surfaces.

Joseph T. Ryerson & Son of Chicago, who are among the largest plate merchants in the country, if not the largest, are about to increase their warehouse facilities very considerably. Their warehouse at 18 to 22 Milwaukee avenue and 47 to 52 North Clinton street is a solidly-built brick structure three stories high, having a deep basement. Two more stories are to be added to this building and the walls are to be further strengthened, so that a load of 500 pounds per square foot can be safely carried. An elevator of unusually large size will enable plates and sheets of any character to be handled on any floor. The capacity of the improved warehouse is estimated at about 12,000 tons. These figures convey some impression of the magnitude of the business done by this firm. They have been obliged for some time to rent storage room outside of their premises to carry their stocks of Plates and Boiler Tubes. Their November stock sheet, which has just been issued, gives an unusually full list of sizes on hand, and demonstrates the ease with which this concern is able to fill carload orders from stock, now an important part of their daily business.

Standard Shaper.

The machine we here illustrate planes 12 inches wide by 30 inches long. It is a column machine, with an adjusting table 14½ inches long and 14½ inches wide, and an auxiliary table 11 inches long to bolt to same when a longer table is desired. This smaller table takes off and leaves an angle plate to bolt long pieces against the table proper. This table is raised and lowered by crank and screw with gibs, that carries it true in its upward and downward travel. The arm that travels and carries the cutting tool is designed to resist all cutting strains, and as true work is done at the outer end of the arm as close to the column. The tool slide has a downward feed by hand of 6 inches, and a cross feed by power. It is on a swivel base, and angle work can be planed. The machine is driven by 12 inch pulleys and a 2-inch double-thread screw to the desired cutting speed, with a quick return two and a half times as fast as the cutting speed. It has a locking device for holding the tool slide solid while siding down or doing angular work. On the sliding head, in front of the operator, is a light cast-iron cover that forms a tool shelf for keeping the cutting tools. On square tables there is another shelf for wrenches, oil can, waste, &c., both being convenient and useful. This machine will do any kind of work that can be done on the ordinary ram shaper, and good true surface work also. It is particularly valuable for cutting key ways in the center of long shafts. No chuck is required with this shaper, as the column forms one side of a chuck, with jaws any desired depth, by lowering the table and using dogs and screw points and clamping against it.

The tool is always cutting at the same speed whether on long or short work, not varying speed at all points of travel, as is the case with crank movements. The screw gives the tool a regular smooth cutting speed, producing the finest kind of a surface on all metals. Water cuts on iron or steel can be taken, and as good results obtained as water turning can be done on a lathe. The stroke of machine can be altered while machine is running and readily adjusted; it will take cut and reverse in 1½ inches, and very short cuts can be taken. The belt runs at high speed with positive cams operating the belt shifters, enabling the machine to work up to a line either way. All bearings are self-oiling and are bushed with bronze; all loose pulleys are self-oiling with bronze bushings; countershaft has self-oiling bearings, and pulleys are balanced. All gibs are of wedge pattern, forced, and held by two nuts or studs, allowing fine adjustment and all metal surface. The screw passes through two bronze nuts that are made in duplicate, and can be furnished at small cost. The machine is so constructed that there is no spring to the arm when cutting out at the extreme end, as in this position the cutting tool hugs the guides tighter, and will not gauge in or raise up.

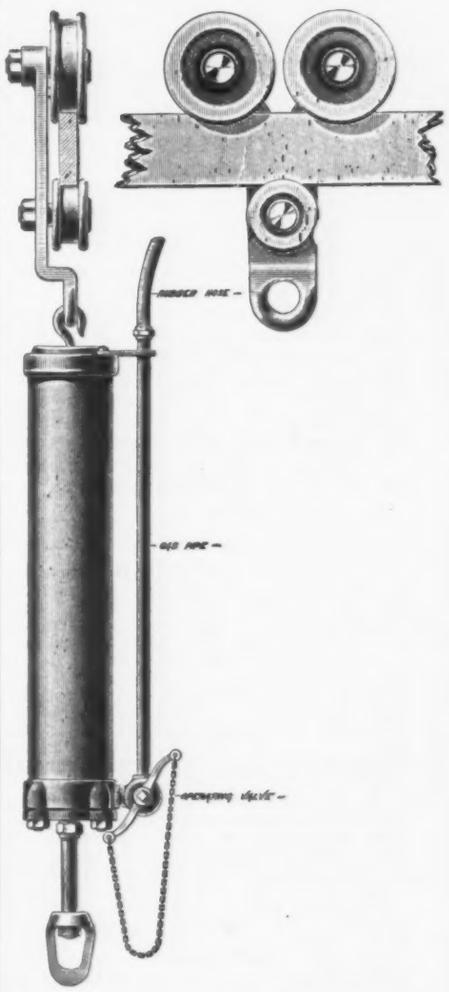


STANDARD SHAPER.

Pneumatic Hoist.

The advantage of devices for lifting comparatively light loads was indicated in the design and introduction of the chain hoist, which has been so extensively used in the last few years for general shop purposes. The demand for ready appliances for quickly and easily handling pieces of work up to 1 or 2 tons in weight has become large. It has arisen from the saving in labor and the increased output that can be obtained from machine tools when the lift is used for such purposes. The pneumatic hoist here represented requires no manual labor to operate it and it lifts the load rapidly. The lifting requires only the manipulation of an easily operated valve, while the speed may be as high as desired.

The cylinder is small, of extra strong wrought-iron pipe, which is carefully reamed out, producing a surface as smooth and clean as can be obtained from brass-lined cylinders; to the upper head is fastened an ordinary pipe cap, to which there is attached a hook by which the hoist can be readily hung to the overhead trolley, and if desired the hoist can be transferred to different parts of the shop. The lower head is made of two castings, one of which is screwed to the end of the cylinder and has a lug to receive a screw end of the valve which supplies the air for lifting. By this construction the piston cannot travel below the air opening, which would interfere with the proper operation of the hoist. To this lower ring is attached a head, which is held in place by four small studs and nuts; this head also contains the stuffing box for packing around the piston rod; by this construction the lower head can be readily removed for an examination of the piston and its packing without in any way disturbing the hoist. The piston is of simple design, consisting of a cast-iron head, follower plate and a leather cup ring, which adjusts itself to the cylinder and prevents leakage. The lower end of the piston rod has a swivel which allows the ring to be turned to any desired position in the rod. The piston acts but one way, as it has been found that the weight of the load, or even the piston rod and head, is sufficient to allow it to drop when the pressure from the lower end is relieved.



Pneumatic Hoist, Built by Pedrick & Ayer.

The valve consists of but four parts: a body, valve stem, cap and small spring to keep the valve stem in place, which, with the air pressure, keeps the stem in constant pressure against the body. One side of the valve is provided with a lug by which it is attached to the lower ring of the hoist. The valve requires no packing, and is of such a construction as to be readily

repaired, although after a constant service of over a year no appreciable wear has been noticed. The capacities of the hoists, with air at 80 pounds, are as follows: 3 inches diameter, 450 pounds; 4 inches diameter, 800 pounds; 6 inches diameter, 1800 pounds; 8 inches diameter, 3200 pounds.

The power is supplied by an air compressor, one of which is 6 inches to 8 inches in diameter, with a storage tank of about 3 feet in diameter and 5 feet long; it will supply sufficient compressed air for 12 to 18 hoists having average use. The hose is attached to the upper end of the wrought-iron pipe, the length of the hose depending upon the floor area which it is desired the hoist should cover. This hoist and the shaper above described are made by Pedrick & Ayer of Philadelphia.

WORLD'S FAIR NOTES.

Regulations Governing Imports.

Secretary Foster has signed the regulations governing the free importation of articles for exhibition at the World's Fair. They supersede the temporary regulations which were issued last January. The Treasury officers have given great care to the subject and it is believed that the rules as adopted will be entirely satisfactory to foreign exhibitors and will further the work of gathering exhibits. The regulations do not follow altogether in the line of those which prevailed at the Centennial, because since then the tariff and administration laws have been changed. But it is believed that the shipper abroad will have no trouble in getting his goods through direct to Chicago from the point of shipment. Copies of the Secretary's document will be sent to the Consuls of the United States, and will also be distributed among other governments through the medium of the State Department.

The rules provide:

HOW EXHIBITS MAY BE IMPORTED.

Every package destined for the exposition should have affixed to it by the foreign shipper one or more labels representing the flag of the country to which it belongs. This label should be about 8 by 12 inches in size and should bear across the face, in plain black letters, the inscription, "Exposition at Chicago." All packages should be plainly marked: "Collector of Customs, Chicago." "Exhibits for Columbian Exposition," as well as with the name of consignee at the port of first arrival in the United States, the shipping marks and numbers of the exhibitor and his name and address.

Every foreign exhibitor will prepare, in duplicate, a statement in the form of an invoice, which shall show the name of the exhibitor, the marks and numbers of the packages, with a description of their contents and a declaration of the quantity and the market value of each separate kind thereof in the country of production. This statement must be signed by the exhibitor, but will require no further verification. One of the invoices will be transmitted by mail to the Collector of Customs at Chicago and the other to the consignee of the goods at the port of first arrival.

All of the bonded transportation lines will discharge their freight at stations in Chicago to be arranged within the exposition grounds, and packages properly marked may be taken to their respective divisions as soon as they have been identified by customs officers.

The consignee of the merchandise at the first port of arrival must present at the custom house the invoice above described, with a bill of lading and an entry in duplicate made out upon the special form to be provided for this purpose by the Treasury Department, which shall show the name of the foreign shipper or owner, the name of the importing vessel, the marks and numbers of the packages, with a statement of the nature of their contents and of their foreign value as declared in the invoice. The entry must also indicate the bonded route by which the goods are to be transported to Chicago and must be signed by the consignee. No other declaration will be required. The goods will be consigned on the customs entry to "Collector of Customs, Chicago," and there need be no computation of duties upon this entry, but the amount charged against the bonds of the transportation company shall be double the invoice value.

The Collector will thereupon issue a special permit bearing the words "Chicago Exposition," authorizing the transfer of the goods from the ship to the bonded railroad for transportation to Chicago, and will record and file one of the entries in his office and send the other by mail with the invoice to the Collector at Chicago.

DELIVERY TO THE INLAND CARRIER.

The permit will be taken by the agent or consignee to the inspector on board the exporting vessel, who will thereupon send the goods, by a cartman duly licensed, to be delivered under the supervision of a customs officer to the transportation company.

The consignee will also prepare a manifesto to the goods, which, after being duly certified, will be handed to the conductor of the car carrying the same, and a duplicate copy must be sent by mail to the Collector of Customs at Chicago. Upon arrival at Chicago of any car containing such articles, the conductor or agent of the railroad company will report such arrivals by the presentation of the manifest to the customs officer designated to receive it, who shall compare the same with the copy received by mail and superintend the opening of the car, taking care to identify the packages by marks and numbers as described in the manifests. In case of the non-receipt of the manifests, the unlading of cars need not for that reason be delayed, but invoice may be used to identify the packages.

Articles sent by foreign governments to the exposition which are used solely for government purposes and are not intended for sale will be admitted to entry at the exterior port of arrival on certificates of the proper Foreign Commissioner, without the production of invoice, but it is desired that the estimated value of each package shall be stated on the certificate or bill of lading, in order that the pecuniary responsibility of the transportation company may be fixed.

APPLIES TO CANADA AND MEXICO.

The regulations will also apply to goods sent to the exposition from foreign contiguous territory. All articles destined for the exposition arriving from Canada on through cars under consular seal, and articles which are sent direct by vessel from any foreign port to Chicago must be consigned by the foreign shipper to the "Collector of Customs" at that port, and on entry being made as in the case of goods arriving at the seaboard, a permit will be issued for the transfer of the goods directly to the exposition grounds.

The buildings and spaces set apart for the purpose of the exposition are constituted "Constructive Bonded Warehouses and Yards," and all foreign articles placed therein under the supervision of the customs officers, and which have been specially imported for exhibition therein, will be treated the same as merchandise in bond. No warehouse entry will be required at Chicago in order to obtain entrances for such goods, but the latter will be kept under customs supervision in accordance with the general regulations governing merchandise in bonded warehouses, except as herein otherwise provided for. The collector at Chicago will keep a special record, in the form of a warehouse ledger, of every invoice, assigning serial numbers to the same in the order of their reception, and the transportation entry received from the collector at the port of arrival will be considered the warehouse entry.

MANNER OF CLAIMING PROPERTY.

After the packages have been placed in the respective positions assigned to them by the officers of the exposition they will be opened by an officer of the customs who shall primarily identify the contents with the invoice only as to quantity and character. Due examination of the contents and appraisement of values will be subsequently made by the appraiser, who shall be furnished with the invoice of the articles to be appraised and shall indorse his report of appraisement upon such invoice in like manner as if such articles were regularly entered for consumption or warehouse. The entry will then be liquidated, the full amount of duties ascertained, and the whole transaction entered upon the prescribed record. All the proceedings relating to the examination, appraisement and liquidation shall be the same as on ordinary importations.

As under the United States tariff, the cost of packages is made a part of the dutiable value of imported goods, the empty boxes, barrels and casks from which imported articles have been taken in order to be displayed should be carefully preserved, so as to be repacked for exportation at the close of the exposition. Dutiable packing cases not exported will be subject to the payment of duty. It is expected that a place will be provided for the storage of such empty packages, and the latter should be recorded and numbered for identification.

Packages containing articles imported for gratuitous distribution or for actual use and consumption in restaurants, refreshment rooms, &c., must be regularly entered for consumption and duty paid thereon before being delivered by the customs officers.

REMAIN IN CARE OF OFFICERS.

The articles after having been received in the exposition will remain under the custody of the customs officers and must not be removed from the place assigned without a permit from the Collector of the Customs or the officer who may be designated by him to grant such permit. In no case shall such articles be released from the custody of the customs officers unless the same shall have been regularly withdrawn for consumption, for warehouse or for export.

Sales may be made during the exposition of articles imported for exhibition, but deliveries of the same will be allowed only at the close of the exposition. For this purpose a regular withdrawal as from bond will be required, and duty must be paid according to law. In case the articles are sold for delivery at some port other than Chicago, a withdrawal may be made for transportation and rewarehousing, duty to be paid at the place of destination. Any exhibitor of articles which shall be sold may authorize withdrawal of the same by the purchaser, such authority to be contained in a written notice to the Collector at Chicago. After the filing of notice the person specified in the same shall be recognized as entitled to all the rights and subject to all the liabilities of the original importer.

Withdrawal from bond cannot be made for less than one entire package, but in case of accidental damage or destruction it is not intended to assess duties upon such articles as shall not have entered into actual consumption in this country. On articles which shall have suffered diminution or deterioration from the incidental handling and necessary exposure the duty, if paid, will be assessed according to the appraised value at the time of withdrawal for consumption.

WHEN THE FAIR IS OVER.

At the close of the exposition all goods intended for exporation will be transported in bond to the seaboard or exterior port, and exported therefrom under the general regulations for immediate export in bond, as modified by special regulations to be in due time provided.

Any exhibitor who may import merchandise in excess of that which he desires to place on view in the exposition may make regular warehouse entry of the same on its arrival at Chicago, whereupon it shall be taken to a United States bonded warehouse and stored without payment of duty, subject to the regulations provided for bonded goods. Withdrawals of merchandise stored under these conditions, if made for the purpose of placing the same within the exposition, will be treated under the provisions for entry on arrival at first port of entry and no duty will be required to be paid. Such merchandise must be delivered at the exposition in charge of a customs officer.

Should any merchandise be abandoned by the owner at the close of the exposition it will be placed in a general order warehouse for twelve months and if then unclaimed will be sold for account of the owner.

Preparing for Winter.

Contractors on the World's Fair buildings at Jackson Park are beginning to prepare for a tough winter. They are trying to inclose all the buildings that it is possible to inclose before the snows begin, so that the space may be used for modeling and carpenter shops to prepare work for the other buildings. Extra forces are being put on where they can be used, and a great effort is being made to hurry the work along. An extra force of carpenters has been put at work on the Forestry Building. This building is small and can be inclosed very soon with the force now at work. It will be used for a modeling shop, in which department of the work a great deal of space will hereafter be needed. The architectural and sculptural models for several of the buildings are completed. The work of enlarging them to full size and casting them will be proceeded with at once.

A great many of the exposition models are being made in New York and Boston, from which cities W. D. Richardson, superintendent of the exterior covering work, has just returned. He reports that many of the architectural models for the Agricultural, Manufactures and Administration buildings are ready for shipment to Chicago. They were made by Ellin, Kitson

& Co., of New York, while John Evans of Boston, has completed and shipped many of the models for Machinery Hall. Philip Martin and Carl Bitter have finished many of the models for several other buildings. All these models, which are about one-quarter size, are to be enlarged and cast on the exposition grounds under the direction of the artists who designed them. There are four sculptured groups for the Administration Building, which, when finished, will be 36 feet high.

Nine women sculptors of the United States have submitted to the Chief of Construction models for the designs which are to adorn the main entrance of the Woman's Building. There will be three divisions of the work; one a group of figures in high relief to fill the pediment over the main entrance, 45 feet long at the base line and 7 feet high in the center. This pediment is to be 50 feet from the ground. In addition there are to be two groups of statuary standing free above the attic cornice, resting on bases which will be 5 feet long, 3 feet deep, 3 feet high, and 60 feet from the ground. These groups, one on either side of the pediment, are to consist of central winged figures 10 feet high and supported by smaller sitting figures. They are to be typical of woman and woman's work in history. The competition for the models, which was limited to women sculptors, closed on November 14, and the Chief of Construction has stored all the models in a private room to await the decision of the Committee on Awards. This committee will consist of Chief Burnham, W. L. Prettyman, and Director L. Hutchinson.

The Illinois State Building.

The Illinois State Building will cost at least $217,478. It will be the finest State structure on the exposition grounds and will have the choicest location. The amount to be expended on the structure, with two exceptions, exceeds the entire appropriations for World's Fair purposes made by other States. Pennsylvania and California have each appropriated $300,000, but the legislatures of remaining States have voted amounts ranging from $5000 by Vermont to $200,000 by Iowa. Sixty-two contractors have submitted bids for the construction of the Illinois Building. The lowest bids and bidders are as follows:

Plumbing and sewering, Lyon & Lee	$2,200
Iron work, Dearborn Foundry Company	17,000
Carpentry work, Probst Construction Company	63,910
Flooring and furring for the staff work, Probst Construction Company	1,514
Plastering, inside and out, Eastman, Smith & Crimp	74,500
Roofing, National Cornice and Iron Company	1,065
Galvanized iron, J. C. McFarland	7,977
Frescoing, Mitchell & Halbach	4,125
Modeling, Freese & Schmidt	5,540
Sculpture work, lowest two bidders for separate items: Lorado Taft	8,500
Johannes Geiert	9,400
Painting and glazing, Goodman & Patek	4,747
Masonry and fire proofing, Henessey Bros.	17,000

Among the bidders, however, was the firm of William Harley & Son, who submitted a bid for all the work, excepting sculpture and frescoing, at $195,800. Adding to this amount the separate bids for sculpture and frescoing, $22,025, makes a total of $217,825.

Inasmuch as the bidding was so close the sub-committee which had the matter in charge declined to award the contracts and decided to lay the matter over until this week for the full meeting of the board. Meanwhile the responsibility of the various bidders will be looked into and data on this point secured for a final decision.

The Fair's Biggest Building.

Chief Allison, of the Department of manufactures, has just completed the following description of the great building for Manufactures and Liberal Arts, which corrects several inaccuracies in the descriptions formerly published. Mr. Allison has obtained from Supervising Architect D. H. Burnham and Coadjutor Architect George B. Post, the designer of the building, many new points and accurate statements of dimensions herewith incorporated:

Notable for its symmetrical proportions, the Manufactures and Liberal Arts Building is the mammoth structure of the exposition. In the center of the building is an enormous hall, without columns, 375 feet 10 inches wide by 1275 feet 10 inches long, covered with a roof formed by great iron arches springing from all sides and rising to a hight of 236 feet above the floor. This magnificent space will be lighted by continuous clerestory windows and by an enormous spread of glass in the roof covering. Around this enormous hall are run a system of continuous naves 107 feet 9 inches wide and 120 feet high, which are also lighted by clerestory windows and glazed roofs, and aisles run on either side of these naves 23 and 46 feet wide respectively, covered by galleries of the same dimensions. The building, including the galleries, has about 40 acres of floor space.

The Manufactures and Liberal Arts Building is in the Corinthian style of architecture, and in point of being severely classic excels nearly all of the other edifices. The exterior of the building is covered with "staff," which is treated to represent marble. The huge fluted columns and the immense arches are apparently of this beautiful material.

There are four great entrances, one in the center of each *façade*. These are designed in the manner of triumphal arches, the central archway of each being 40 feet wide and 80 feet high. Surmounting these portals is the great attic story, ornamented with sculptured eagles 18 feet high, and on each side above the side arches are great panels with inscriptions, and the spandrils are filled with sculptured figures in bas-relief. At each corner of the main building are pavilions forming great arched entrances, which are designed in harmony with the great portals. The interior of these pavilions are richly decorated with sculpture and mural paintings. The long *façades* of the great hall surrounding the building are composed of a series of arches filled with immense glass windows. The lower portion of these arches, up to the level of the gallery floor and 25 feet in depth, is open to the outside, thus forming a covered loggia, which forms an open promenade for the public and will provide a very interesting feature, particularly on the east side, where it faces the lake. It is intended to locate here a number of *cafés*, where great crowds can loiter at their ease and enjoy the breezes and cool shadows of the afternoon.

The architect of this great building, George B. Post of New York, has been remarkably successful in giving architectural symmetry and effectiveness to the immense proportions with which he has to deal, and his work stands as one of the marvels of the exposition. The building occupies a most conspicuous place in the grounds. It faces the lake, with only lawns and promenades between. North of it is the United States Government Building, south the harbor and lagoon, and west the Electrical Building.

Brevities.

The interesting statement is made that five carloads of steel cut nails will be required in the construction of the floor of the Manufactures Building.

The Committee on Grounds and Buildings have accepted a 200-horse power, high speed, automatic engine, constructed by the New York Safety Steam Power Company, to be used for running the dynamos of the temporary power plant. This engine will cost the exposition management nothing, since it will be installed as an exhibit.

The Consul-General of Japan at New York, Mr. Takahira, writes to Chief Skiff of the Mines Department that the mining and metallurgical exhibit from that country in copper, gold, silver and lead will be something exceptionally large; also in porcelains, potters' clays and bronzes.

Aluminum bronze is to be used for roofing the big Administration Building and the four smaller ones. The Committee on Grounds and Buildings have just awarded the contract for this work to James A. Miller & Bro. of Chicago for $54,000.

The Committee on Grounds and Buildings have concurred in a recommendation of the Committee on Electricity that the subways for conveying electric-light wires throughout the grounds be constructed of wood, concrete and plaster. There will be in all several miles of the conduits and subways, which will cost between $30,000 and $50,000.

Members of the Wholesale Saddlery Associations of the United States intend to have an interesting exhibit at the World's Fair. They have agreed to raise $35,000 in aid of the general exhibit to be made by their trade, and this will be devoted to the general purposes of the joint display. The money will be largely used for the purchase of ancient and rare specimens of saddlery and harness, illustrative of all periods and peoples. The collection will be made by special agents, and be exhibited in the Transportation Building.

Up to date Treasurer Seeberger has issued 123,769 orders for tickets for admission to the fair. These orders have been granted to subscribers who have paid up their subscription in full. Last year an order for two tickets was granted for the prepayment of each share. This year but one ticket for each share has been granted. The shares are $10 each. The Rock Island Railway has made an advance payment which secured an order for it for 5000 tickets.

One of the most interesting features of the Government display will be the section devoted to Indians. Families will be chosen to illustrate the best industries of the Indians. Perhaps half a dozen families of the wild tribes will be chosen. These will be brought to Jackson Park and put on a reservation of about 2½ acres. The Navajoes will weave their blankets, the Zunis make pottery and the Pueblos their peculiar earthen ware. The Piutes will make water bottles of straw, all under the direction of the Government officials who have them in charge. A model school will probably be in operation.

Among the themes selected for discussion by the International Congress on Political Economic Reform to be held during the Exposition are: "Weights and Measures. Present international differences of weights and measures and the importance of the adoption of a uniform system by the leading nations and its extension as rapidly as may be throughout the world."

Free silver coinage continues to lose ground, according to the latest developments. A Washington correspondent who has carefully surveyed the ground says: "Taking the new House of Representatives, there are the best reasons for believing that the sincere opponents of free coinage among the 234 Democratic members number nearly 90. Turning to the Republican side, the total membership, with the recent gain of a member in Michigan, is 89. The overwhelming majority of these are against free coinage."

THE WEEK.

Baron De Hirsch's representative has signed a contract with the Government for the purchase of 13,000 square leagues of land in the Argentine Republic. Colonists will give America the go-by.

Impatient at the tardy movements of the Czar, who was said to contemplate a prohibition of wheat exports, bulls on the Exchange have issued a ukase almost daily for a month past. The climax of fake achievements was reached one day last week, when a statement was made that purported to be on official authority. The genuine was received on Saturday and took effect the 23d inst.

The figures of the applicants for licenses for the production of cane sugar under the Bounty act are 553,711,380 pounds in Louisiana, 3,588,500 pounds in Florida and 14,107,000 pounds in Texas, making a total of 572,106,880 pounds in 730 establishments in those three States. The total acreage under cultivation is reported at 253,667. The estimated production upon which bounty will be paid on beet root sugar is 29,210,000 pounds from 12,744 acres. In 1887 we produced in this country from the sugar beet 400,000 pounds of sugar, in 1888 about 3,600,000 pounds, in 1889 about 6,000,000 pounds. In 1890 three factories in this country (two in California and one in Nebraska) produced about 8,000,000 pounds. Three additional factories have been established during the past year, and it is estimated that their production this year will be about 25,000,000 pounds. Under the head of sorghum sugar, the estimated production is 2,500,000 pounds from 5007 acres in Kansas, Missouri, Minnesota and Michigan.

The new aqueduct from Loch Katrine to Glasgow is to be 24¼ miles in length and mostly tunnel. Syphons are to be used in two places. The new service reservoir at Craigmaddie will hold 700,000,000 gallons.

The locomotive Charles Dickens, on the London and Northwestern Railway's special express service between Manchester and London, has run 1,000,000 miles in nine years—a feat without parallel in English railway traveling. It has never had a breakdown.

The British West India Islands are looking for improved trade relations with the United States. Sir Neville Lubbock, representing a number of the islands, is at present in Washington endeavoring to conclude a treaty by which their principal products will gain free admission to the markets of the United States. As sugar is already admitted free into this country Secretary Blaine will probably want to know what benefits the islands can concede in exchange. The United States exports to the islands are about $10,000,000 per annum and imports a third larger. Canada evinces a deep interest in the subject, as her efforts in this direction have met with only indifferent success. The *Montreal Gazette* says it will be interesting "to learn whether the United States will conclude with the islands a treaty which leaves the latter free to extend like privileges not merely to Great Britain, but equally to all the colonies." The question of discriminating duties on the part of a colony against Great Britain will be especially interesting to Canada, whose direct overtures seem to have been treated somewhat cavilierly, although made through the personal presence of a cabinet minister. The precedent which may be established might have an important bearing.

It is now understood in Washington that before January 1, 1892, an agreement will be officially made public by which both the United States and Mexico will have the benefits of reciprocity. Probably coffee and hides are the principal products of Mexico that will be admitted free of duty. It is not yet determined what products of the United States will be reciprocally admitted by the Mexican Government. As a matter of fact, coffee and hides have been on the free list with Mexico since 1872. It is naturally considered equitable that corresponding concessions should be made by that country in the matter of duties on imports from the United States. Minister Ryan expresses the fullest confidence that Mexico will consent to this, and, indeed, is more than willing to join in any fair reciprocal arrangement which will promote the largest and freest commerical relations. Mr. Ryan says the export of lead ores to the United States is now larger than ever before. So far as now appears, there is no serious obstacle to reciprocity with Mexico.

Over 500,000 barrels of apples have been sent to the United Kingdom this season.

The Niagara water-power tunnel is being rapidly excavated. One day last week the advance was 329 feet, a rate which it is believed by the contractors was never equaled in tunnel building. Upward of 4000 feet have been excavated.

The "whaleback," besides making a successful voyage to Europe, has gone safely around Cape Horn, completely demonstrating its qualities as a sea boat, and now measures will be taken at once to erect a whaleback plant on the Pacific Coast, to which this style of vessel seems well adapted. Charles L. Colby of the Northern Pacific Railroad; Colgate Hoyt, president of the American Steel Barge Company, and others who are jointly interested in both branches of enterprise, a few days ago visited the works at Superior and then proceeded on their journey to the Pacific. Mr. Colby says the barge company expect greatly to enlarge their business, making the shipyard at Superior one of the largest in the country. A passenger whaleback will be built this winter. "I do not see why," he remarked, "it should not take the place of the old style passenger vessels even more rapidly than its prototype is displacing the old line freight carrier."

Early estimates of the increased wheat yield are borne out by actual results. In Minnesota the wheat acreage in 1890 was 2,078,787, yielding 40,298,142 bushels of grain; but this year the acreage is 3,359,983, which at 20 bushels per acre, a fair average for this year, will yield 67,193,660 bushels of wheat.

Oklahoma, lately known as a cattle range, aspires to be a State.

The statistics of passenger traffic on the street and elevated railroads and ferries of New York and Brooklyn are stupendous. The Manhattan Elevated system carried during the year ending September 30 over 200,000,000 passengers, which is at the rate of 550,000 a day. Nearly 190,000,000 persons traveled on the railroads of Brooklyn and Long Island during the last year. About 40,000,000 people crossed the East River Bridge. The traffic of the North River ferries aggregates about 80,000,000 a year. This makes a total of 510,000,000 passengers, without counting the millions who travel on the East River and Staten Island ferries and the surface railroads, or who enter the city on the suburban trains centering in the Grand Central Station.

Official publication is made of a treaty of friendship, commerce and navigation between San Domingo and Mexico.

The daily newspapers take note that in Europe the talk is all for peace, where the preparations are all for war. Chances of trade are in the balance.

Chinese advices from Shanghai as late as the 2d ult. do not show that trade is affected by riotous disturbance, native merchants treating the subject with "contemptuous silence." Apparently, says the North China *Herald*, native merchants have not the slightest apprehension of anything occurring to interfere to any appreciable extent with their trade, and the large engagements which they have entered into, covering the next six months, should certainly be some surety for their faith. Clearances continue to go on most satisfactorily for all parts of the country, and although trade may have been interrupted for a day or two in some of the disturbed districts no mention has ever been made of any losses being sustained.

The Union Iron Works have just launched a tug boat, built wholly of steel, for John D. Spreckles, the decks covered with teak; cost, $175,000.

Every desirable acre of land in Kansas is said to have advanced in value 25 per cent. in the last 12 months.

The dedication of the Colorado Mining Stock Exchange Building and the opening of the first national mining congress were celebrated at Denver, 18th inst. Speeches were delivered by Charles E. Taylor, president of the Mining Exchange; Hon. Platt Rogers, Mayor of Denver; Hon. Charles Abbey of Portland, Maine; Hon. H. A. W. Tabor, H. W. Kirchner, architect of the building, and B. Clark Wheeler of Aspen. All of the speakers advocated free and unlimited coinage of silver.

New York City claims ownership to all the land lying under the Hudson River within 1000 feet from low water mark, which is a fact of interest to tunnel builders who depend on the Legislature for authority to act.

The South's direct trade with Europe from Newport News was inaugurated the 18th inst., when the pioneer of three large English steamers, just purchased in Europe, sailed from Liverpool with a general cargo. There will be 20 departures from Newport News before January 1 to London, Liverpool, Glasgow and Havre. These are the first regular steamship lines to Europe from any port south of Baltimore.

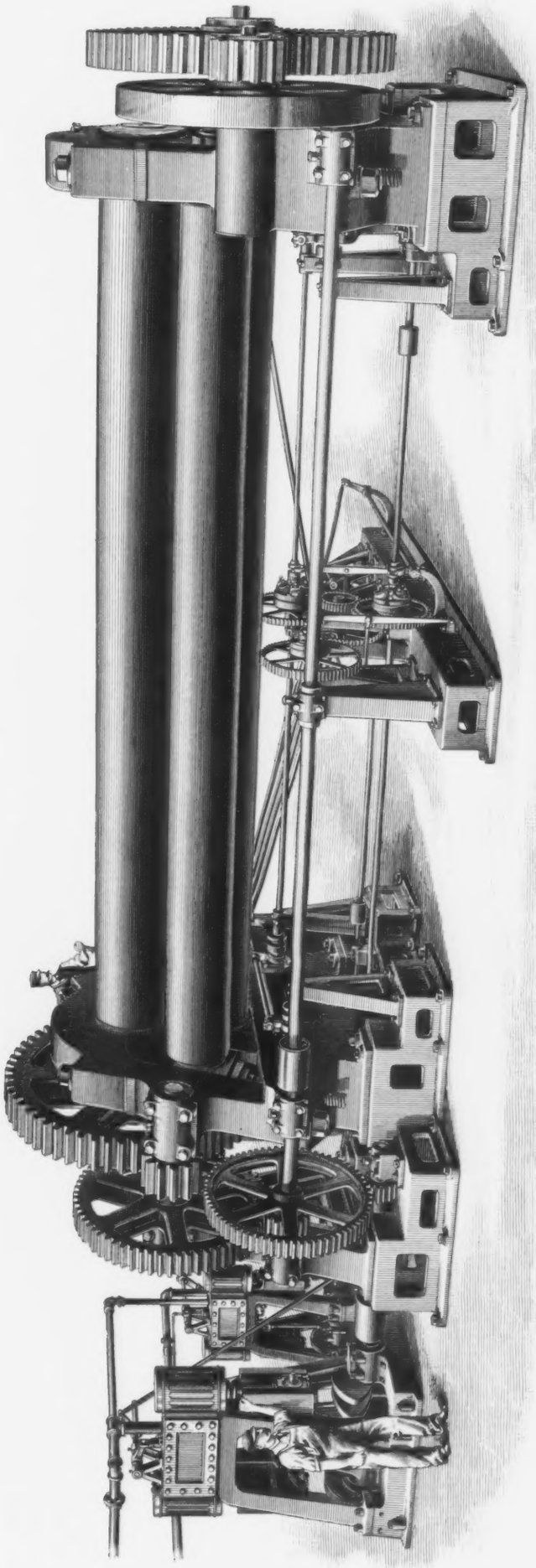
The new Italian rifle is a repeater and will penetrate planks 5 inches thick at a distance of 4000 feet.

The electric crane is being introduced on London docks. Heretofore these cranes have been operated by steam.

It is said that C. P. Huntington will build five new steamships at Newport News for the Morgan Line.

New England savings banks show large gains. In New Hampshire the gain in the year is $4,285,000. In Connecticut the gain compared with thirty years ago is $97,000,000. In Vermont deposits increased last year $2,289,000.

The Pittsburgh Tin Plate Works, which are being built by Strawbridge & Beaver, at Kensington, near Pittsburgh, on the Allegheny Valley Railroad, are rapidly nearing completion. The cold rolling mill engine and boiler are now being placed in position, and the balance of the machinery is on the ground. The Morewood tinning sets, which will be used in their mill, were built by the Robinson-Rea Mfg. Company of Pittsburgh and have been pronounced to be the most complete machines that have yet been produced. This concern expect to be in operation by December 15, and will have an output of 100 boxes per day. They will double the capacity before next spring. Both bright plates and ternes will be manufactured.



BENDING ROLLS BUILT BY WM. SELLERS & CO. (INCORPORATED), PHILADELPHIA.

The Iron Age

New York, Thursday, November 26 1891.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS KIRCHHOFF, - - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS - - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

Financial Aspects in Europe.

The European monetary situation is precarious, and although the latest accounts are reassuring, the changing phases of each day are of sufficient portent to affect not only the market for American securities, but food products of all kinds. In New York and Chicago on Saturday it became definitely known that the long expected Russian ukase prohibiting the export of wheat had been issued the same day in St. Petersburg. The prohibition includes not only wheat, but all wheat products, and was to take effect on Monday, November 23. In New York and western primary markets the prices of wheat advanced and other cereals were stronger in sympathy. The action of the Russian Government was construed as conclusive evidence that the accounts previously received of apprehended famine in that country had not been exaggerated. In support of this view word comes from Berlin that Count Tolstoi, the Russian social reformer, "advocates the purchase of corn in America in time to protect the country from famine and the terrible social disturbance that is certain to attend such a condition of affairs." Following the recent ukase prohibiting exports of rye this new edict is of special significance in its bearing upon the immediate future of the grain trade in the United States, since it is now manifest that Western Europe is effectually cut off from a source of grain supply that heretofore has been a chief dependence and that the deficiency must be made up by exports from America.

In Europe last week at all the centers of finance there was less anxiety, but the fact was recognized that the danger supposed to be impending was only temporarily averted, not removed. The Russian loan syndicate in Paris had been extricated from its difficulties, but only through extraordinary measures. In London an improvement in the Bank of England reserves was regarded as an assuring sympton. A series of failures throughout Germany, while indicating a strained monetary condition, had no effect on the general situation. Taking into view the disastrous crop failures that have occurred in many parts of Europe, and the many contingencies that are liable to occur while the relations of European powers remain so much complicated as at present, business interests must suffer through the intimidation of capital and the discouragement of new enterprises. Meteorologically speaking, the signals are cautionary. For business men in the United States the single fact that inspires confidence is the impregnable bulwark of strength presented in our enormous crops, affording an unfailing resource which may be regarded with far more complacency than the most formidable array of men glittering with bayonets.

It is to the unsettled condition of European markets that a leading financier in Wall street ascribes the quietness prevailing in general trade on this side of the Atlantic. "A graver situation," he says, "can hardly be conceived." Doubtless the influences here referred to are distinctly felt wherever there are direct connections, whether in mercantile affairs or strictly in the department of finance, but it is easy to err in estimating their relative importance. Low prices in the cotton trade is the primal factor through a large section of country, and the silver question may be regarded as only in abeyance. The enormous corn crop as yet is scarcely out of the husk. Both abroad and at home the situation is complex.

Bar-Iron Extras.

The bar-iron extras are gradually drifting from the control of the manufacturers. An effort is made by the leading concerns to maintain them, but they are successful only in part. It is now seen that when the card was openly cut in two by one of the largest bar-iron manufacturers in the country, the action thus taken was quite conservative as compared with what has been done by other makers. It may, of course, be charged that the open publication of a half-rate card led to further demoralization, but this would be very difficult of demonstration. Many of those who most severely criticised the publication of the half-rate card were making even greater concessions to secure orders. At present it would be hard to determine what are strictly base sizes, as the practice is growing of including among base sizes others which once carried very respectable extras. The worst feature of this condition of affairs is that the tendency seems to be more and more toward reducing the range of extras.

There are several good reasons assigned for this. One is that of late years numerous manufacturing concerns have sprung up which run on specialties and consume large quantities of bars of only a few sizes. Their orders are so desirable that they have no difficulty in finding bar makers who will supply them at a flat price, if, indeed, concessions are not made on the current base price for ordinary bar-iron orders. It can easily be seen how such a precedent will extend itself to other classes of customers. Again, the manufacture of soft steel in bar-iron shapes is increasing, and there seems to be no uniform practice in this branch of trade relative to extras. Some makers adhere quite consistently to the merchant steel card, others follow the iron card, and others again quote a net price on the sizes wanted, which is presumably based on the estimated cost of manufacture. It can readily b seen how a high bar-iron extra would under such circumstances be underbid by a soft-steel rate. This feature of the trade is now so well understood by shrewd buyers that they ask for bids on both iron and soft steel when making inquiries on any considerable lot. A further complication has projected itself into the trade in recent years in the establishment of quite a respectable number of bar mills manufacturing a limited range of sizes. The time was when the bar-iron trade was largely controlled by manufacturers who turned out a general line, from hoops to heavy shafting. Now, however, in nearly every consuming center of any importance there is at least one mill making bar iron, and perhaps turning out strictly bar sizes. The result of close competition for business with manufacturers of a general line is certainly not very favorable for the preservation intact of the bar-iron card. Above and beyond everything else is, of course, the depression in business, which is felt very keenly by bar-iron makers. If their mills were being driven to their full capacity the extras would be charged in all cases beyond doubt. But with their capacity not fully employed, and some concerns rather anxiously seeking for orders, the extras are given away.

Prominent bar-iron makers assert that it is high time for a revision of the card. It has become so antiquated, and so many inroads have been made on it by the changes in the trade, that it has to a very great extent lost its significance in fixing relative prices. The task of revision would be a difficult piece of work in view of the new elements to be considered, but there is certainly no lack of shrewd and thoroughly-informed men in the bar-iron trade fully equal to a satisfactory adjustment of the question.

Our Industrial Expansion.

Any one who has been led to consider the facts is forcibly struck by the tremendous expansion still going on in our manufacturing facilities. The year 1891 has been a year of great progress in this direction. Whether we regard the production of the cruder forms of iron and steel or their conversion into highly finished merchantable products, the conditions are the same. Even in lines in which competition is so keen that capital already invested receives no return, there are new enterprises springing into birth, and often of pretentious proportions, and while new establishments are being built the older ones are not idle, but are increasing their facilities or introducing improvements so as to enlarge their output. The question may well be asked: What is to be the result of this creative activity in manufacturing iron and steel products? Those interested evidently regard the future with not only hope, but confidence. They would otherwise not make new investments or increase their investments in old enterprises. But one cannot resist the impression that the days of large profits in the iron trade have passed, never to return. Should a sudden heavy

demand be precipitated upon the country, such as that of 1879-80, there would be a rise in values, but the demand would have to be of most extraordinary proportions to so engage the productive capacity of the country as to cause a great advance. The manufacturers are in better shape to handle a heavy increase in trade than ever before. The great output of nearly 9,250,000 tons of pig iron in 1890 could be very largely increased without seriously disturbing the level of values maintained in our recent industrial history. In fact, there is hardly a branch of the iron and steel trades in which an increased demand of 25 per cent. over the best year could not easily be handled. This may seem to be rather a wild statement, in the estimation of many, but the more they investigate the subject and acquaint themselves with the facts the less will they be inclined to doubt.

The Silver Question.

The Bankers' Congress, which was held lately at New Orleans, brought out a series of letters and essays which are worthy of the careful study of business men, who must ultimately shape legislation. One of the most interesting among the documents presented was a letter from Secretary Foster, who appears as a defender of the law of July 14, 1890, which provided for the monthly purchase by the Government of 4,500,000 ounces of silver at the market price. Under that law, according to the statement of Secretary Foster, there have been bought from August 13, 1890, to November 1, 1891, 66,588,536 ounces, at a cost of $68,626,565, from which $27,848,475 have been coined, the remainder being stored, in the shape of fine bars, "as a reserve against Treasury notes outstanding." Secretary Foster estimates that the new law provides for an annual addition to our circulating medium, deducting the average retirement of national bank notes of $26,000,000, of about $24,000,000. Secretary Foster attributes the failure of the large purchases of silver to advance the price of silver to the large amounts of foreign silver attracted to this market, and to a falling off in the shipments of silver to India and China, the reduction of the shipments from London and India alone, for the first nine months of the calendar year being $17,000,000. Mr. Foster says:

While it is true that the amount of money in circulation in this country at the present time is greater than at any previous period in our history, and more *per capita* than in any of the leading commercial nations of the world, with the single exception of France, I am of the opinion that owing to our rapid growth in population and wealth and the extraordinary development in all kinds of business, a yearly increase in our circulating medium somewhat proportionate to our growth in population is imperatively demanded. The issue of Treasury notes under this act affords such an increase of a perfectly convenient and sound currency, based dollar for dollar upon the cost value of silver bullion, redeemable on demand in gold coin and with the pledge of the Government to maintain it at par. That this addition to our circulation has proved beneficial was forcibly exhibited during the spring and summer of the present year, when, through the necessities of Europe, gold was withdrawn from this country in large quantities, aggregating in a brief period of five months over $72,000,000.

But for the substitute provided for domestic trade, in the form of Treasury notes, issued by the Government in the purchase of silver bullion, it is probable that this country would not have been able to stand this enormous drain of gold without producing a stringency in the money market and serious business disturbance. Another object of the act of July 14, 1890, was to provide a home market for the silver product of the United States by requiring the purchase of a quantity of silver approximating the monthly product of our mines. That this large absorption of silver by the Government for currency purposes would cause a rapid enhancement in the value of silver was very generally believed. Indeed, it was hoped that the increase in the value of silver under the operations of this law would be so great and of so permanent a nature that a point would soon be reached when we could with safety open our mints to the free coinage of silver.

Subsequently at the dinner of the New York Chamber of Commerce, Mr. Foster spoke on the policy of the Government to attain what the law commands—viz., to maintain the parity between gold and silver. While he declared emphatically that with all our resources we have not the power to do this, if the policy of free coinage of silver prevailed, he did express the belief that purchases of 4,500,000 ounces per month, would render the task comparatively easy. During the course of his speech Mr. Foster asserted that "it is now agreed on all sides, that gold alone furnishes too narrow a basis on which to conduct the money affairs of the world."

We believe that Secretary Foster went altogether too far in that assumption. Among the leaders in finance there is a wide divergence of opinion. There are very few indeed who have been caught by the free coinage craze. A great many share Secretary Foster's views or hold opinions approaching them. But there is a large number who hold that a prosperous country like our own need not struggle for the chimerical aim of maintaining the parity of the two metals, and that its accumulation of gold and its credit is ample enough to conduct its money affairs.

George S. Coe, president of the American Exchange National Bank, concluded an able address before the Bankers' Congress with the following words:

This strange and exceptional system is not a financial expedient forced upon the country by poverty and necessity. It is a policy voluntarily and deliberately chosen. Four and a half millions a month of fresh and active capital are thus continually abstracted from useful service and converted into a torpid and uncertain investment, whose outcome no intelligent man can confidently predict.

The silver question can only be settled by international agreement. The gold reserves so rapidly drawn from this country in the earlier part of the year are in great measure returning, and both in our own and the European States such changes in relative financial conditions are likely to occur that it is believed they may all be persuaded to reconsider the situation in the light of recent experience, and in view of the widening commercial intercourse that modern improvements are continually promoting in every part of the world.

By its large and incessant purchases of silver bullion for two or three years past our Government has lifted the heavy burden from European nations, inevitable in so great a change of monetary policy. Thus temporarily relieved, they have since been comparatively indifferent to the economic results. But the derangement at length manifest here also now in its turn demands relief. This, if naturally sought by a resale of the purchased metal, would throw upon the market an amount of silver only convertible at large depreciation. The active capital expended for this purchase must be restored, either by such a sale or by conversion of the bullion into international money. Which will it be?

In every aspect of the subject difficulties arise that vitally concern the whole commercial world, and imperatively call for early and deliberate consideration.

Silver, as money, will not quietly retire. It persistently claims the right to be continued in useful service by the side of its old companion, and will claim it everywhere.

It is quite evident that we are industriously hauling the chestnuts out of the fire for others, and that there is every chance that we shall be forced to pay dearly in the end for present folly.

The Interstate Commerce Cases.

Very much to the surprise of the community, the Federal Grand Jury at Chicago on the 19th inst. returned indictments against the following, who were charged with having received or given rates below the legal tariff rates, thus injuring the business of the smaller shippers:

George Firmenich of the Firmenich Mfg. Company of Marshalltown, Iowa., with headquarters at Chicago.
John Firmenich of the same company.
D. Edwin Hartwell, secretary of the Swift & Co. packing concern.
George B. Spriggs, general freight agent of the Nickel Plate Road.
Edwin C. Swift, member of the firm of Swift & Co.
Gustavus S. Swift, member of the same firm.
Lewis F. Swift, member of the same firm.

The indictments were the result of the ten days' work of the jury. The Chicago *Tribune* says there was no surprise over the indictment of the Swifts and Hartwell, who compose the firm of Swift & Co. at the stock yards, but it was hardly thought that any of the railroad men could be reached. That only one man—the unfortunate Mr. Spriggs of the Nickel Plate—was indicted quite astonished some of the alleged freight-rate manipulators who were summoned before the inquisitors, but not a few of those summoned, it is said, barely escaped being drawn into the net, and they can thank a few of the most conservative of the jurors, who had considerable difficulty in restraining the hot headed farmers on the jury who were in favor of indicting the whole crowd of those who the jury were morally certain had manipulated the rates, but against whom the evidence was not sufficiently strong. The alleged revelations of the methods pursued in favoring the big shippers were astounding. The system and its secrecy were almost perfect, and there was little wonder that the jury at one time decided to abandon the effort to get at the guilty persons.

The jury when it entered upon its labors took up the cases against Swift & Co. Scores of small shippers of dressed beef and other meats, the same as handled by Swift & Co., had been complaining for months to the Interstate Commerce Commission that they were unable to send meats to Eastern points like Buffalo, New York and Boston and compete with Swift & Co., and that they were positive Swift & Co. had been receiving more favorable rates than they from the railroads. Realizing that it had a stupendous task before it in ferreting out the facts, the jury sent its subpœnas and gathered in all the freight agents of the principal lines running East to the points where Swift & Co. were doing all the business. All these agents were put through a searching examination and they were compelled to

bring in their books and papers showing the rates charged and rebates paid. Most of the agents declined to testify, but the jury worked steadily away at the documentary evidence, and with the help of Special Agent Kretchman of the commission and District Attorney Milchrist's experience the jury got down to bed rock and finally decided that the men who worked the wires for Swift & Co. were Frank G. Bowles and Arthur Fay, who, it is said, were at the head of a sort of clearing-house for the firm. Bowles, it was alleged, went among the different railroad freight agents getting rates below the legal tariff. The proof against a number of the agents who it is said gave Bowles lower rates than those charged against smaller shippers was not altogether clear and convincing, but in the case against George B. Spriggs the jurymen claimed the evidence was ample.

The man who received the rebate money, it was said, was Arthur Fay. Mr. Fay, although nominally only a clerk for Swift & Co., for months seemed to be rolling in wealth. At different times he had to his own credit in the National Live Stock Bank at the Stock Yards something like $30,000. All these facts the Grand Jury found after using the strong power they possessed to bring in before them all of Swift's clerks and the auditors of the various roads over which the goods were sent. After the discovery was made that Fay had a fortune in the National Live Stock Bank it was plain sailing. The books of the bank showed that Fay, as soon as his deposit grew suspiciously large, had it transferred to Swift & Co.'s account, where it was swallowed up.

As the evidence became stronger against the Swifts—for Fay and Bowles were only supposed to be tools of the big firm—and Mr. Spriggs, the jury summoned those three. They declined to certify even to their own figures. Mr. Spriggs professed to be innocent. He said he knew absolutely nothing about rebates. Neither did Fay nor Bowles, but the latter two condescended to admit certain facts from which they could not very well escape.

The sum and substance of all the inquiry regarding the Swifts was the deduction that in six months' time Swift & Co. had received from three to six cents off the legal tariff, and that the entire amount figured up to something like $25,000 or $30,000. There was some proof that the Lackawanna and Traders' Dispatch Fast Freight lines had also enjoyed a large amount of the business of Swift & Co. at less than legal charges, and if the evidence had been complete almost all of the Eastern roads would have been enmeshed, as the Lackawanna and Traders' Dispatch does business with all Eastern roads. But the officers of these two lines were successfull in their defense, although, it is said, the jury had evidence enough against them to convince a minority of the investigators of their guilt.

This closed the evidence against the Eastern roads, and after Fay and Spriggs had been dismissed the jurymen turned their attention from the Eastern roads and Swift & Co. to the Chicago, St. Paul and Kansas City line. Numerous howls and protests had come from Chicago glue manufacturers that they were being discriminated against in freight rates over the Chicago, St. Paul and Kansas City road, and an investigation led the jurymen to believe that the Fermenich Mfg. Company, an immense glue concern at Marshalltown, Iowa, with headquarters here, was the company that was enjoying a monopoly in rates. It was claimed that the firm received a rate from Marshalltown here of 19 cents per 100 pounds, and this was less than half the tariff rates. The legal charges were between $55 and $60 per car. The Fermenich Mfg. Company paid $25 and $30 per car. Freight Agent Toughy of the Chicago, St. Paul and Kansas City was sent for. He came with his books, and it was claimed that from them and from other sources it was learned that the firm complained or had secured nearly $80,000 in rebates in six months. The indictment of the principal owners speedily followed. None of the Chicago, St. Paul and Kansas City officials were indicted, as the proof against them was not sufficiently convincing. This ended the investigation.

It now remains to be seen what result will follow the indictments. If convictions are secured the public will be still more astonished, as they have not yet been fully convinced that the penalties of the Interstate Commerce act will really be enforced. It may be assumed that the indictments would not have been found if the Grand Jury had not been convinced that ample testimony would be forthcoming that these men have violated the law in one of its leading provisions. Whether that testimony can be obtained when the final trial comes off is an open question. It is curious that no test case under this act has yet reached the Supreme Court of the United States. The law dates back to April, 1887, almost four years. There is a body of commissioners created for the sole purpose of carrying out the law, and yet none beyond preliminary steps have been taken. The Counselman case was appealed last year, it is true, and may come up for a hearing before many months have passed. If it should be decided soon, and in favor of the defendant, these new cases will probably fall with it.

It is a singular development of the investigation just had that railway officials express considerable satisfaction over the outcome. The indictment of such prominent shippers, they think, will prove a valuable lesson to other shippers who have, in open defiance of the law, coerced the railroads to give them special privileges or inducements of some kind or other. If it were not for the importuning of shippers, railway officials claim, rates would be seldom cut, and violations of the law by the railroads would not be so frequent.

OBITUARY.

LOUIS A. STONE.

Louis A. Stone, junior member of the firm of C. C. & L. A. Stone, proprietors of the old Stone Foundry and Machine Shops, at Cortland, N. Y., died on the 15th inst. His demise occurred at his residence in Homer, and typhoid fever of a violent type was the cause. He was a young man of promise, and is mourned by a large circle of friends. He was a high-minded and capable business man. For some months past he had been engaged in perfecting recently invented machinery. He was 36 years of age and leaves a widow.

WILLIAM W. LYMAN

died at his home, Meriden, Conn., on the morning of November 15, at the age of 70 years and 7 months. He was born in Woodford, Bennington County, Vt., March 29, 1821, and came to Meriden in 1836, at which place he has since made his home. Mr. Lyman has held many positions of trust, among which was that of president of the Meriden Cutlery Company. He is referred to as leaving an enviable reputation, being in all of his dealings honorable and upright; and was always deeply interested in movements tending to advance the best interests of Meriden.

NAHUM S. RUSSELL.

Russell & Co., Massillon, Ohio, announce the death of Nahum S. Russell, the senior member of the firm, in his seventy-ninth year. Had he lived until January 1 Mr. Russell would have completed a half century in the business which he helped to found. By reason of deafness and at his own request he was relieved of all the responsibilities of the business several years since, but his kind and genial nature had endeared him to all who were brought in contact with him.

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., November 24, 1891.

The officers of the Naval Board in charge of the tests of armor plates at Indian Head have made a careful examination of the backs of the plates used in the firings of ten days ago. The result is the conclusive demonstration of the superiority of the nickel steel Harveyized over the simple steel. The high carbon nickel steel Harveyized also produced better results than the low carbon similarly treated. These plates are also regarded as proof against the 6-inch projectile in about every probable contingency of actual warfare. The backs of the plates in the last firings presented a much better appearance than in the former tests, which indicated a decided advance. None of the shot went entirely through and some did not even make a bulge in the back surface. The cracks were also less numerous and less wide.

It has not yet been determined when the third and last firings will take place, but it is proposed to make the date as soon as the necessary preparations can be made. The report of these tests will not only be one of the most important documents of the kind ever put out under the auspieces of this Government, but will undoubtedly make an impression upon the warlike powers of Europe. The military and naval *attachés* of foreign governments who witnessed the first two firings have already submitted preliminary reports to their governments. In conversation they do not disguise their surprise at the rapid and marvelous advances made by the United States.

An effort will be made to hasten the final report on these tests, in order to lay some of the facts before Congress for the purpose of showing the successful results already achieved. It is expected that this will lead to further liberal appropriations for the continuance of tests. The final tests, as already stated in *The Iron Age*, will be confined to the 8-inch shot. These will be more severe than the former tests of four 6-inch shot at the angle, and one 8-inch center shot. There was some comment on the behavior of the 8-inch Carpenter shot as compared with the 8-inch Firminy. The Carpenter process is practically that of the Firminy, which they own, but at the last firing the imported Firminy did more effective execution than the two made according to the same formula at the Carpenter Works, at Reading, Pa. It is understood that the shot for the next firing will be of the very best manufacture.

The Speakership.

The issue in the contest over the Speakership has drawn the lines between a radical and conservative policy on tariff revision. Mr. Mills represents the former and Mr. Crisp the latter line of action. During the past few days Mr. Crisp has made decided advances. Under the lead of New York he is gaining strength in all directions. He is somewhat embarassed by the pronounced support of Tammany. That aggressive and potential organization is not very popular with the average Western and Southern Democrat. They concede its power, however. The present operations are simply preliminary. The candidates and their friends do not intend to force the fighting until after Thanksgiving. Until then but few members will reach the Capital.

CORRESPONDENCE.

The Rod Mill Record.

To the Editor: The exact figures on the output of wire rods at the rod mill of Carnegie, Phipps & Co. are as follows: Charged weight, 342,960 pounds; finished weight, 321,660 pounds. This was the output for a ten-hour turn. I desire to state also in connection that our product for yesterday, 16th inst., for two straight ten-hour turns was 621,110 pounds, the charged weight being 661,820 pounds.

P. R. DILLON,
Supt., C., P. & Co., Ld.

BEAVER FALLS, November 17.

Tinning Cast Iron.

To the Editor: I noticed in *The Iron Age* of November 19 an article on tinning cast iron. Now, while it would not be policy at this time for me to give a description of my process for publication, I cannot refrain from suggesting that your correspondent does not grasp the subject fully.

If he or any other doubter will send to my address gray iron castings of any kind or quality I will guarantee to tin them perfectly, as perfectly as could be done on malleable or wrought iron. The firms using my process are the White Mountain Freezer Company, Nashua, N. H., on freezer castings and general job tinning; Enterprise Mfg. Company, Philadephia, on meat choppers and fruit pressers; Griswold Mfg. Company, Erie, Pa., on tea kettles and other cast-iron hollow ware; Cleveland Foundry Company, on sad iron tops and general job work; Shepard Hardware Company, Buffalo, N. Y., on Lightning Freezer castings and general job work. I send you by same mail samples of cast iron tinned.

W. T. FLANDERS.

NASHUA, N. H., November 20, 1891.

PERSONAL.

Thos. C. Davies, manager of the blast furnace plant of Brown, Bonnell & Co., at Youngstown, Ohio, who has been abroad for two months on a pleasure and business trip, returned home last week.

Cornelius N. Bliss succeeds E. H. Ammidown as president of the American Protective Tariff League.

John Taylor, the inventor of the Taylor Electric Motor Truck, who has been the chief draftsman of the Gilbert Car Mfg. Company, at Troy, N. Y., has resigned.

Powell Stackhouse has been elected president of the Cambria Iron Company, to succeed the late E. Y. Townsend. John W. Townsend, son of E. Y., has been elected first vice-president, and J. Lowber Welsh, second vice-president.

New and improved engines have been ordered by the New Jersey Central Railroad Company. An order has been given the Rogers Locomotive Works for ten compound cylinder freight locomotives. These engines will have three pairs of driving wheels, 21 x 26 inch cylinder, with 62-inch wheels. The engines now in use have 50-inch wheels. The new engines will have speed as well as power. Orders are also to be placed with the Baldwin Works for a four-cylinder freight locomotive and one compound four-cylinder passenger locomotive, with four more compound engines to follow if the first compound engine proves a success. These passenger engines will be of the latest and best mechanical construction, having, if built on the compound system, 20 x 24 inch cylinders and 78-inch wheels. Pittsburgh coal operators will order 3000 cars this winter.

Use of Milling Machines.

COMPOUND INDEXING.

The Brown & Sharpe Mfg. Company, of Providence, R. I., have just issued a treatise on the construction and use of milling machines, the object being to assist those who are not familiar with these machines. From this work we take the following on the subject of compound indexing:

It is sometimes desired to divide the work into a number of parts, which cannot be obtained by a single indexing because the index plates have not a circle with the requisite number of holes. Frequently, however, the desired divisions can be readily obtained by using two circles of holes, according to the method termed compound indexing—a method which has been considered quite fully by Messrs. Fred J. Miller, Walter Gribben, G. Schneider and J. V. Hamilton, and explained by them in contributions to the *American Machinist*.

In the following tables, and for these we are chiefly indebted to the kindness of Walter Gribben, the method of combining the two index settings is indicated by the signs plus and minus; the plus sign showing that the two indexings are added together, or that the movement of the work in both indexings is in the same direction, while the minus sign shows that we take the difference between the two indexings, or that we move one indexing in one direction and the second indexing in the opposite direction, the principle in making the calculations being simply the addition or subtraction of fractions. The denominators of the fractions indicate which circles of holes are used in the index plates:

Compound Index Movements of the No. 1 Universal Milling Machine.

Number of divisions.	Moves.	Number of divisions.	Moves.
69	$21/23 - 11/33$	225	$5/18 - 2/20$
77	$9/21 + 3/33$	231	$3/21 + 1/33$
87	$23/29 - 11/33$	253	$12/23 - 12/33$
91	$6/39 + 14/49$	259	$11/37 - 7/49$
93	$3/31 + 11/33$	272	$10/20 - 6/17$
96	$3/18 + 6/20$	273	$21/49 - 11/39$
99	$15/27 - 5/33$	276	$11/23 - 11/33$
138	$11/33 - 1/33$	287	$14/49 - 6/41$
147	$13/39 - 3/49$	288	$5/20 - 2/18$
154	$5/21 - 4/33$	294	$23/49 - 13/39$
174	$11/33 - 3/29$	297	$2/33 + 2/27$
182	$3/39 + 7/49$	301	$18/43 - 14/49$
186	$17/31 - 11/33$	304	$10/20 - 7/19$
198	$3/27 + 3/33$	308	$4/21 - 2/33$

Compound Index Movements on the No. 3 Universal Milling Machine.

Number of divisions.	Moves.	Number of divisions.	Moves.
57	$6/18 + 7/19$	217	$12/21 - 12/21$
93	$11/33 + 3/31$	228	$6/18 - 3/19$
114	$12/18 - 6/19$	282	$12/39 - 9/47$
141	$26/39 - 16/47$	285	$12/18 - 10/19$
171	$8/13 - 4/19$	304	$9/18 - 7/19$
186	$22/33 - 14/21$		

The correctness of the operations indicated by the table is easily appreciated when the fractions are added or subtracted. For example: to divide the work into 69 parts the figures are $\frac{2}{3}\frac{1}{3} - \frac{1}{3}\frac{1}{3} = \frac{2}{3}\frac{2}{3} - \frac{1}{2} = \frac{6}{6}\frac{6}{6} - \frac{2}{6}\frac{3}{6} = \frac{4}{6}\frac{0}{6}$; and this equals one division of the work or the desired result, as there are 40 teeth in the worm wheel, and to obtain one-sixty-ninth of a complete revolution it is desired that 40 should be divided by 69.

The following table is the result of Mr. Schneider's ingenious suggestion that sometimes it is not neccssary to use the compound indexing for obtaining each division of the work, but that it is often sufficient to use the method once in going around the work twice or twice in going around three times, &c. For example: 96 divisions may be obtained by indexing for 48 and going completely around the work in the ordinary way, then dividing one of the spaces in equal parts, or obtaining one of the desired 96 divisions by the compound method ($\frac{3}{1}\frac{}{5} + \frac{5}{2}\frac{}{6}$), and finally by again going around the work, indexing as at first for 48 divisions.

Compound Index Movements for No. 1 Universal Milling Machine. (Schneider's Method.)

Number of teeth.	Set for.	Times around.	Ordinary moves.	Compound moves.	Number of compound moves.
69	23	3	$1^{17}/_{23}$	$21/23 - 11/33$	2
87	29	3	$1^{11}/_{29}$	$22/29 - 11/33$	2
91	13	7	$3\ 3/39$	$6/39 + 14/49$	2
93	31	3	$1\ 9/31$	$3/31 + 11/33$	2
96	48	2	$15/18$	$3/18 + 6/20$	2
138	46	3	$20/23$	$11/33 - 1/33$	2
174	58	3	$20/29$	$11/33 - 3/29$	2
182	26	7	$1^{21}/_{39}$	$3/39 + 7/49$	2
186	62	3	$20/31$	$17/31 - 11/33$	2
225	45	5	$24/27$	$5/18 - 2/20$	2
231	21	11	$1^{19}/_{21}$	$2/21 + 1/33$	2
253	23	11	$1^{17}/_{23}$	$12/23 - 12/33$	2
259	37	7	$1\ 3/37$	$11/37 - 7/49$	2
272	136	2	$8/17$	$10/20 - 6/17$	2
273	39	7	$1\ 1/39$	$21/49 - 11/39$	2
276	92	3	$10/23$	$11/23 - 11/33$	2
287	41	7	$40/41$	$14/49 - 6/41$	2
288	144	2	$5/18$	$5/20 - 2/18$	2
301	43	7	$40/43$	$18/43 - 14/49$	2
304	152	2	$5/19$	$10/20 - 7/19$	2

In his articles upon compound indexing, Mr. Fred. J. Miller has shown how much the usefulness of an index plate is increased if the back pin of the mechanism is made adjustable, the same as the front pin, and Mr. Miller holds a patent on index centers, which is important in this connection. Applying this principle to our machines, if the back pin of the No. 8 were made so that it would engage in the outer circle of holes of the index plates, all the figures in the tables would apply to the No. 3, as well as the No. 1 Universal, and if the No. 1 had an adjustable back pin, the number of the attainable movements would be correspondingly increased. The following table is indicative of this.

Compound Index Movements. Extra Divisions Obtained by Making the Back Pin Adjustable on No. 1 Universal Milling Machine.

Number of divisions.	Moves.	Number of divisions.	Moves.
51	$9/17 + 12/18$	204	$9/17 - 6/18$
57	$6/18 + 7/19$	207	$7/23 - 3/27$
63	$11/21 + 3/27$	217	$12/21 - 12/21$
102	$1/17 + 6/18$	222	$19/37 - 13/39$
111	$1/27 + 13/39$	228	$6/18 - 3/19$
114	$12/18 - 6/19$	246	$13/39 - 7/41$
123	$26/39 - 14/41$	252	$1/21 + 3/27$
126	$2/21 + 6/27$	255	$6/18 - 3/17$
129	$13/39 - 1/43$	258	$21/42 - 13/29$
141	$26/39 - 18/47$	261	$6/27 - 3/29$
153	$13/17 - 6/18$	279	$3/27 + 1/21$
161	$9/23 - 3/21$	282	$13/30 - 9/47$
171	$6/18 - 4/19$	285	$9/19 - 6/18$
189	$6/21 - 3/27$	306	$6/17 - 4/18$
192	$6/18 - 3/18$		

The newly organized Builders' Exchange in Pittsburgh purpose establishing an industrial kindergarten like those of New York, Chicago and Philadelphia. A dozen boys have already been enlisted for instruction in the trades.

MANUFACTURING.

Iron and Steel.

In answer to the report that the entire plant of the Brilliant Steel and Iron Company, at Brilliant, Ohio, has been closed down for an indefinite period, we are advised that the rumor is untrue. The plant was closed down for a few days last week on account of lack of orders, but was expected to resume operations on Monday, November 23.

The Enterprise Boiler Company of Youngstown, Ohio, have been awarded a contract for the erection of a new hearth casing and ring on one of the Seneca furnaces at Graffton, Ohio, operated by McKeefrey & Hoflus of Leetonia, Ohio. The work has not yet been commenced, as the furnace is still in blast, but will probably be blown out in a few days in order that these repairs and additions may be made. Julian Kennedy, the well-known consulting engineer, of Pittsburgh, will have charge of the work. The Enterprise Boiler Company also recently did some work at one of the Carrie stacks of the Carrie Furnace Company, at Rankin Station, Pa., and also at furnace A of Carnegie Bros. & Co., Limited, at Bessemer, Pa

The Muncie Land Company have bought 1200 acres of land adjoining Muncie, Ind., on which a number of manufacturing plants are to be established. Some have been already begun. They are the Toledo (Ohio) Bolt and Nut Works, and the Toledo Rolling Mill, under the management of George O. Cromwell, employing about 400 men; the third is a large steel mill to be operated by Pittsburgh and Chicago capitalists, manufacturing stoves, ranges, blooms, billets and tin plates, with a capital stock of $200,000. A corrugated and galvanized iron industry, by Chicago and St. Louis parties, and a large bar steel manufactory, to be operated by Akron capitalists, are other concerns.

The Troy, N. Y., Malleable Iron Company have filed a certificate with the Secretary of State, at Albany, showing that the capital stock of the company has been increased from $100,000 to $200,000, the increase to be in $25 shares, as are the present shares of the capital stock. The increase of stock will be offered pro rata among the present stockholders. The capital is fully paid up, $14,175.17 in cash, the remainder being included in property necessary for the business of the company, valued at $85,-248.83. The debts of the company, exclusive of the capital stock of $100,000, aggregate $133,022.50.

The West Superior Iron and Steel Company have entered into an agreement with the Holland Radiator Mfg. Company of Chicago for the manufacture of furnaces and grate bars, making necessary the creation of a new foundry. The value of the output for the first year, it is said, will be $100,000.

The Texas Iron Rolling Mill is being removed from Fort Worth to Tyler, in the same State, where greater advantages are expected to be secured. The owners hope to have it ready for operation in its new location by January 1.

Application for a charter has been made for the Carlin Mfg. Company of Pittsburgh to manufacture iron and steel castings. David Carlin, Wm. A. Kerr, G. Ross Williams, R. F. Kennedy and W. S. Swartz are the incorporators of the ne v concern.

The American Tube and Iron Company, with works at Middletown, Pa., and Youngstown, Ohio, have received an order for 15 miles of 5-inch pipe, all to be of their Matheson patent lock joint pipe, together with a lot of special bands, fittings, &c. This pipe will be used in the construction of a system of water works in Managua and Araya, Nicaragua. The line will carry the water to the cities from a volcano, and for half a mile will lie on a lava bed to take care of itself. The main will have a fall of 1200 feet, which is something out of the ordinary. The engineer in charge of the work is Gus C. Henning of New York City.

The foundry of William B. Scaife & Sons on First avenue, Pittsburgh, was damaged by fire to the extent of $10,000 last week. The burnt portion of their works will at once be rebuilt.

Carnegie, Phipps & Co., Limited, of Pittsburgh, have recently purchased 55 acres of land adjoining their Duquesne Steel Works, at Duquesne, Pa. The purpose for which this additional ground has been secured has not been given out, but it is understood that it was secured with a view of making extensive additions to the Duquesne Steel Works.

A number of officials of the National Tube Works Company, whose plant is located at McKeesport, Pa., were in Pittsburgh for the purpose of inspecting these large works. Among the party were H. W. Converse, D. W. Hitchcock, Wm. S. Daton, J. H. Flagler, T. E. Sweitzer, Frederick Ayer, Nelson Bartlett and W. A. Cromwell, all of New York City. During the visit of these gentlemen to Pittsburgh a meeting of the officials of the National Tube Works Company was held in the office of the company, at Lewis Block, in that city.

The Niles Iron and Steel Roofing Company of Niles, Ohio, have commenced the manufacture of metallic lathing. They have already sent out a few small lots which have proved entirely satisfactory. Also located in Niles, is the plant of the Bostwick Metal Lath Company, whose metallic lathing is shipped to all parts of the country.

No. 3 Furnace of the Pennsylvania Steel Company, Steelton, Pa., which has been running on spiegel for about 18 months, has been put on iron. It will shortly be banked to allow of repairs being made.

The Muskegon Iron and Steel Company have commenced the manufacture of iron by the Adams direct process at Muskegon, Mich.

No. 2 Furnace of the Coleraine Iron Company, at Redington, Pa., will shortly go into blast. It has been idle for some time undergoing repairs.

The Gilmore-Eustis Rolling Mills, at Cambridgeport, Mass., have shut down.

The Star and Crescent Furnace, at Rusk, Texas, is about completed, and will be put in operation at an early day.

The assignees of the Blandon Iron and Steel Company of Blandon, Pa., are endeavoring to organize a new company, with the creditors as stockholders. It is quite probable that a settlement will be effected and the works started up again.

The Excelsior Furnace, at Ishpeming, Mich., will soon begin operations. It was built in 1872, and with the exception of a short blast made about a year ago has been idle for several years. An effort was made about a year since to operate the furnace, and repairs were made, but owing to some difficulty among the owners operations were suspended after a short run, in spite of the fact that the furnace was working successfully and profitably.

The West Superior Iron and Steel Company, West Superior, Wis., have made a contract with the West Duluth Blast Furnace to use the entire output of pig iron of the latter. The furnace is now ready to start up, and is expected to produce about 150 tons a day. It will run on two-thirds Gogebic soft ores and one-third Chandler soft.

An effort is being made to establish iron and steel works at Tacoma, Wash. Alexander Delano of Detroit, Mich., is the prime mover in the enterprise, which includes the building of blast furnaces and rolling mills. A committee has been appointed to canvass for $200,-000 in subscriptions.

On Saturday, the 21st inst., Thos. Carlin's Sons, founders and machinists, of Allegheny City, Pa, shipped to Strawbridge & Beaver, Limited, at Kensington, Pa., the engine, boiler, gearing, &c., to be used in operating the cold rolling plant for the new tin-plate plant which is being erected by the last named concern at Kensington. Considerable of the machinery for this new tin-plate plant will be furnished by the Leechburg Foundry and Machine Company of Pittsburgh, Pa., whose works are located at Leechburg, Pa.

The Riverside Iron Works of Wheeling, W. Va., are making a number of extensive improvements at their blast furnace, located in Steubenville, Ohio They have built a very large brick pump house on the Ohio River bank, and have equipped it with a pump that will discharge 1,500,000 gallons of water perday. A new main of 10-inch cast-iron pipe is being laid from the pump house. It is the intention of the firm to add a new iron-cast house to the furnace in the near future.

C Furnace of the Crane Iron Company, at Catasauqua, Pa., has been relined, and the Whitwell stoves are now undergoing the same operation, and it is expected that the furnace will resume blast some time before the first of the new year.

The Alabama Rolling Mill Company of Birmingham, Ala., announce that they have rebuilt that portion of their rolling mill recently destroyed by fire, and completed improvements and additions that will increase their production to 75 tons per day. The entire plant is now in operation, and the company are in a position to promptly execute orders.

Machinery.

The Chester Twist Drill and Tool Company of Chester, Pa., are busily engaged on their patented spiral forged twist and drill, for which they claim important features. They claim that, unlike the old-style milled drill, they are forged in solid dies, the steel being hammered to the center, forming the spiral, at the same time making the cutting edge and point the toughest and best part of the drill, thereby causing it to cut faster and last longer, with less power and grinding. The drills are all ground after hardening exact in diameter to sizes, making them run true and preferable for machine use.

The Lewis Foundry and Machine Company, Limited, of South Side, Pittsburgh, Pa., have recently added to their foundry equipment an electric crane built by the Morgan Engineering Company, Alliance, Ohio, the first electric crane used in Pittsburgh.

The Woodruff Mfg. Company, Hartford, Conn., proprietors of the Woodruff Keying System for Machinery, advise us that they are gradually increasing their facilities and rapidly getting in position to keep pace with the demand for their machines.

During this month the Westinghouse Machine Company of Pittsburgh, Pa., shipped two 500 horse-power Westinghouse compound engines to the Missouri Electric Light and Power Company, at St. Louis, Mo. These are the first engines ever built by the Westinghouse Machine Company that will develop 500 horse-power, but it is the intention of the firm to construct other engines of this type should they be required.

Benj. Sebastian, Jr., formerly connected with the Sebastian-May Company of Sidney, Ohio, has established himself at 41, 43 and 45 Central avenue, Cincinnati, Ohio, under the style of the Sebastian Lathe Company, and will manufacture a complete line of foot and power lathes.

The St. John Bolt and Nut Works, at St. John, N. B., have been destroyed by fire. The loss on buildings, machinery and manufactured stock on hand will amount to $50,000, on which there was an insurance of $25,000.

About ten years ago the Carnegie interests at Pittsburgh commenced experimenting with water tube boilers, with a view of their ultimate adoption in case they proved successful. In 1883 they put in 832 horse-power of Babcock & Wilcox water tube boilers at the Lucy furnace plant in Pittsburgh to use blast furnace gas for fuel. In 1884 they put in 416 horse-power of the same type of boiler at their Upper Union Mills in Pittsburgh, to use coal for fuel, and a year or two later they put 500 horse-power of Heine boilers in the Edgar Thomson Steel Works, at Bessemer, Pa. In the beginning of 1891 they contracted for 1000 horse-power additional Babcock & Wilcox boilers for their Lucy Furnace in Pittsburgh; a few months later they bought 1200 horse-power of the Sterling water tube boilers for their Lower Union Mills on Twenty-ninth street, Pittsburgh. About this time the firm realized that the days of natural gas, in the Pittsburgh district at least, were numbered, and that to return to coal meant a great increase in boiler power to all of their plants, and, as a consequence, took up the matter of water tube boilers more thoroughly, with the result that they have purchased from the Babcock & Wilcox Boiler Company boiler equipment as follows: For the Upper Union Mills, 750 horse-power; Duquesne Steel Works, at Duquesne, Pa, 1000 horse-power; Homestead Steel Works, Homestead, Pa., 1500 horse-power; Edgar Thomson Steel Works, 2000 horse-power; or a total of 5250 horse-power in the month of October, or a grand total of 6250 horse-power Babcock & Wilcox boilers purchased during this year. These boilers are now being delivered, and when they are started the Carnegie associaciations will be using over 8000 horse-power of this type of water tube boiler, some of them having been used for nine years.

Scaife & Sons' foundry, at Pittsburgh, has been damaged $10,000 by fire.

A fire at Canton, Ohio, destroyed the J. McLain Machine Works, and damaged the works of the Canton Steam Pump Company.

The Taylor Engine Works, at Chambersburg, Pa., have started up under the new management with a force of 80 men. The works had been idle since February last, when the company then operating them became financially embarrassed.

The Jeffrey Mfg. Company of Columbus, Ohio, well-known makers of chain belting, elevating and conveying machinery, mill and mining supplies, &c., have opened a branch office at 15 Cortlandt street, New York, with F. C. Ayers in charge.

Leavitt Machine Company, Orange, Mass., are building an addition to their plant, 23 x 15 feet, two stories high. This enlargement will be used for office and shipping room and will double the company's capacity in factory, as the old office and shipping room took up more room than was needed. They refer to a constantly increasing demand for the valve reseating machine which they manufacture.

Hardware.

The Lufkin Rule Company, Cleveland, Ohio, will remove their plant about January 1 to Saginaw, Mich., where they are erecting a

large factory, which will be fully equipped. The company allude to this as the largest tape and rule factory in the country, and they will thus be in a better position to get out their goods than heretofore. They will also establish offices in the different large cities for the convenience of their customers.

Thomas Norris, Philipsburg, Pa., manufacturer of shovels and mining tools of all kinds, intends soon to issue a list relating to his goods, the first since his establishment in the United States.

Penn Hardware Company, Reading, Pa., have just erected a new brass foundry, 40 x 120 feet. It was put in operation 16th inst.

The Anthony Wayne Mfg. Company, Ft. Wayne, Ind., advise us that they were recently agreeably surprised to receive an inquiry from a prominent mercantile firm located at Sumatra, Dutch East India, through their advertisement in *The Iron Age*.

J. M. Waddel Mfg. Company, Greenfield, Ohio, are increasing their capacity. A new 80 horse-power boiler and engine are being put in, and they will commence the erection of a large addition to their present plant at once.

The Barry & James Mfg. Company, 20 North Sixth street, Philadelphia, have been recently incorporated, and are preparing to put on the market a line of divided household furniture, comprising cooking pots, skillets, kettles, wash boilers, house pails, &c., in the use of which, it is claimed, time, labor and expense are saved. These goods are now being made in a small way for local trade, but as soon as the company have obtained all of their patterns, stamps, &c., they will manufacture them in large quantities to meet the general demand.

The Eagle Bicycle Mfg. Company have removed their plant from Stamford, Conn., to Torrington, Conn., where they have largely increased facilities for conducting their business for the coming year. In this connection they state that they will maintain and improve the high reputation which their goods have attained for fine material and good workmanship, and that they will be in a better position than ever before to give satisfaction to their customers.

The Warwick Cycle Mfg. Company, Springfield, Mass., have been reorganized under the laws of Massachusetts with a capital stock of $200,000 and the following officers: George D. Chamberlain, president; Joel H. Hendrick, vice-president and secretary; J. P. Kelly, mechanical engineer.

The shear, scissor and cutlery department of the Chicago Drop Forge Works, also known as the Hatch Cutlery Works of Chicago, whose works are situated at Kensington, Ill., one of Chicago's suburbs, has been induced to remove to Milwaukee. The company receive a bonus of $21,000 in land and money, and the works will be located on the Lindwurm farm, 1 mile north of the city limits. The capital stock of the corporation is $100,000, with $15,000 paid up. The buildings will occupy about 1½ acres of land, adjoining the Northwestern Railroad, from which side tracks will be built to the plant. The main building will be 50 x 320 feet, either two or three stories high, with walls suitable for carrying additional stories when needed. It is expected that 150 skilled workmen will be employed at the start, the product consisting of shears, scissors and nearly all kinds of cutlery of the best grade.

Lane Bros., Poughkeepsie, N. Y., owing to the large demand for their goods, have recently erebted an addition 40 x 30 feet, which is now about ready for occupation. This will, it is thought, enable them to fill orders promptly.

D. Harrington & Son, Southbridge, Mass., have enlarged and rearranged their knife factory, to better accommodate their growing business. An L 16 x 24 has been built at one end of the factory to furnish room for presses formerly located on the second floor. The room occupied by the presses is now utilized for extra grinders, and the entire building is to be heated by steam. Changing the position of machinery, building partitions and other alterations has made the works more convenient and has increased the capacity of the factory 50 per cent.

It is reported that English capital is likely to be invested in the manufacturing of bicycles in the United States. It is stated that the tariff on imported wheels, added to the fresght and other charges, result in an aggregate of about 50 per cent. on the manufacturers' prices abroad. It is expected that bicycles can be manufactured here at a less cost than imported machines can be laid down.

Miscellaneous.

The Buckeye Works, at Poughkeepsie, N. Y., are rushed with business. As the duty on mowers in France will be raised $5 on each machine on January 1, the plant is being driven in order to get as many mowers into France before that time as possible.

The plant of the Indiana Car and Foundry Company, at Indianapolis, is offered for sale.

The iron roof for the storehouse which the United States Government is building at Willett's Point, L. I., will be furnished by the Berlin Iron Bridge Company of East Berlin, Conn.

The Page Belting Company report a very active business for October, with sales very largely in excess of one year ago. Among the belts which they have furnished are the following: Of their Acme link belts, a 12-inch belt for Chicago; two 12-inch belts in New York; one 12-inch belt to John Mathie, Knoxville, Tenn.; Edison Electric Illuminating Company, Easton, Pa.; People's Street Railway Company, Scranton, Pa.; Solway Process Company, Syracuse, N. Y.; Huntington Electric Light Company, Huntington, Pa. Of their wide main driving belts, a complete outfit, together with narrow belts, to the Pontoosuc Mfg. Company, Pittsfield, Mass.; a large drive belt to James Leffel & Co., Springfield, Ohio; one to the Redington Lumber Company, Phillips, Maine; Mfg. Investment Company, Madison, Maine; the Watertown Arsenal in Massachusetts, a complete outfit, including several 20 and 26 inch belts; one large belt to T. H. Chubb Rod Company, Ely Station, Vt.; several large belts to the Natural Dam Pulp Company, Governeur, N. Y.; New Jersey Car Spring and Rubber Company; a new mill outfit in Yokohama, Japan, and other export orders to Cuba, as well as other West India Islands; also a main driving belt to the Cheshire Improvement Company, Limited, Winchenden, Mass. These are only a few of the belts, both link and large main driving belts, that have been furnished by this company during the present month, others being sent to all parts of the country.

Mr. Record of the Record Mfg. Company, Conneaut, Ohio, visited Philadelphia this week and contracted with F. B. Phillips for one of his Davies & Phillips' combined pickling and scouring machines; also one of Davies & Phillips' cleaning machines, to take the product of two Edwards machines (2000 boxes a week), just arrived in New York. The buildings are being erected and the machines will be in position the first week before Christmas so as to be turning out their tin plate by January 1. Mr. Record will make high-class bright tin plate only; no ternes or coke tins. Competent workmen have been engaged and will be on hand with arrival of machinery.

The Muncie Architectural Iron Works at Muncie, Ind., have passed into the hands of a new company.

The Milwaukee Bridge and Iron Works, Milwaukee, Wis., have effected a compromise with their creditors on the basis of 35 cents on the dollar. The claims against the company amount to about $225,000.

The plant of the Birmingham, Ala., Safe and Lock Company has been entirely destroyed by fire. The loss is $75,000, covered by an insurance of $25,000.

The new rod mill of Wallace & Sons at Ansonia, Conn., has been completed and put into operation.

Ground has been broken at Milwaukee, Wis., for the new works of the Bucyrus Steam Shovel Company.

Among recently licensed corporations in Illinois are the following: The Superior Mfg. Company, at Kankakee; to manufacture nails; capital stock, $100,000; incorporators, Nathan C. Wheeler, H. L. Irwin and E. A. Irwin. The Rossow Bros. Mfg. Company, at Chicago; to manufacture wagons; capital stock, $75,000; incorporators, Frederick Rossow, Charles Rossow and A. F. Rossow. The American Radiator Company, at Chicago; to manufacture heating appliances; capital stock, $250,000; incorporators, R. C. McManus, F. M. Peters and A. W. Green. The Boyer Automatic Change Making Register Company, at East St. Louis; to manufacture the Boyer automatic change making register; capital stock, $100,000; incorporators, Cuyler B Boyer, Patrick M. Sullivan and Benjamin H. Canby. The United States Mangle and Laundry Machine Company, at Chicago; to manufacture laundry machinery; capital stock, $100,000; incorporators, Axel R. Gustafron, W. F. Anderson and Louis A. F. Pro. Joliet Wire Basket Company, at Joliet; to make baskets; capital stock, $100,000; incorporators, T. A. Mason, G. L. Vance and J. O. Barrett. The Smith & Phillips Mfg. Company, at Chicago; to manufacture machinery; capital stock, $50,000; incorporators, C. H. Smith, F. V. Phillips and D. E. Smith. The Nowlin Safety Switch and Signal Company, at Chicago; to manufacture railroad appliances; capital stock, $500,000; incorporators, C. E. Nowlin, Charles Kirchner and W. G. Barnet. Litchfield Light, Heat and Power Company, at Litchfield; to operate gas, water and electric works; capital stock, $50,000; incorporators, H. H. Beach, J. B. W. Amzden and Robert W. Foster. The Keane Novelty Company, at Chicago; to manufacture hardware specialties; capital stock, $10,000; incorporators, A. M. Clark, H. Othmer and J. T. Keane.

The Bellaire Stamping Company are beginning to move their machinery from Bellaire, Ohio, to Harvey, Ill. It is said the factory will be in operation by January 1. All the employees of the company will be furnished with railroad tickets and transportation for their goods, and it is expected that quite a force will consequently move. Within the next 90 days 500 houses will be erected near the factory.

R. L. Martin of Pittsburgh, Pa., dealer in coke, coal and fire brick, has become identified with a number of Philadelphia capitalists, and will develop a large coke works in Virginia. For some years Mr. Martin has been superintendent of the blast furnace of the Fairchance Furnace Company, Fairchance, Pa., and has a wide knowledge of the coke industry.

The Neracher Sprinkler Company of Warren, Ohio, and the Hill Automatic Sprinkler Company of Columbus, Ga., have decided to combine their interests, and with this object in view a corporation has been chartered under the laws of Georgia known as the Neracher & Hill Sprinkler Company. This new organization will commence business on January 1, 1892, with a paid up capital of about $250,000. All the appliances in use by these two companies, including the Neracher and the Hill sprinklers, will continue to be manufactured and sold. Each company have now an extensive plant for the manufacture of their specialties in their respective localities, and both plants will continue to be operated as usual and in the near future both will be considerably enlarged. The *personnel* of both companies will be united, and together with the established business and enlarged capital and resources will make a very strong combination for successfully conducting the sprinkler business. Agencies will be established in all the large cities of the United States and Canada.

The Corrugated Iron Pool.

For some time past a movement has been on foot among the manufacturers of iron and steel roofing to form a pool. The efforts are being carried on under the auspices of the National Iron Roofing Association, of which C. Aldrich is president, E. C. Ewing vice-president and P. J. Hyndman secretary and treasurer. The essential features of the plan proposed are the following: A commissioner is to be appointed who is to fix the number of squares of corrugated iron, V-crimped and beaded iron to be sold during the year from February 1, 1892, to February 1, 1893. The allotments to the members are to be based on the average sales for one, two or three years, the allotment to be governed monthly by the average amount of output for each month for the periods mentioned, and is to be increased by the average percentage shown to have been made during the previous years. A monthly statement must be made to the commissioners, who may transfer future orders to such concerns who have not sold up to allotment, or may advance prices. When the allotment is not sufficient to supply the demand at the average price obtained for the product in general, the commissioner shall, after proper investigation and when the request has been proven to be just, grant an increase of product sufficient to properly maintain the trade of the firm without injury to its competitors. The commissioner is granted access to the books of the concerns, and a penalty of $100 for each infraction of the contract is provided. We understand that a number of firms have indicated their desire to enter such an arrangement, while others are doubtful as to the expediency of such a step. Some of the details of the plan are objected to. The annual meeting of the National Iron Roofing Association is to be held on January 12, and it is possible that by that time the plans will have sufficiently matured to carry the new pool to a successful issue.

San Francisco News.

In my last letter I mentioned that the strike of the molders was in a very bad way and I have since briefly telegraphed you of its utter collapse. There is but little more to add. The molders in a circular explained that the cessation of the strike was due to a desire to avoid further suffering to their members. It was a pity that they did not come to that conclusion more than a year ago. Then indeed suffering would have been prevented to their members, who have made great and unselfish sacrifices in the interests of the strike or rather of those ordering it. I am convinced thoroughly that the sober second thought of the molders condemned the whole proceeding before a week was over, but then they were in for the fight, and perhaps, too, many of them hoped that awed by their united attitude the bosses would give in, and this they probably would have done but that matters between Eastern competition and union exactions had arrived at such a pass, financially and otherwise, that they had to take some decisive step, and they took it. No doubt they have lost a great deal of money and trade that they will not be able to call back for many a day, but they can, at least, call their souls their own. and they can bid for a job of work without fearing that their calculations may be all upset by some new demand of the union. There is no objection to unions *per se*—the iron founders are all too democratic, too American for that—but they have established the principle that they shall have the exclusive right to control their own business affairs. The molders say: "In view of the fact that during recent conversations with the proprietors we have learned that they will not reduce the wages or ostracize any of the men or boys who have been engaged in the strike, and will ask no question as to an applicant being a union man or not, and that no objection would be raised to unionizing the shops if we can do so, we have decided to call a halt. This is done to prevent, by all means in our power, any further suffering on the part of our men and boys, and to let the public see that we were always anxious to end the warfare if given reasonable assurances that we would not be driven to the wall."

This last is merely covering a retreat, as there never was a moment during the progress of the strike when it could not have been ended on precisely the same conditions. The trade will now set to work to repair damages and try to restore some of the old time prosperity. What this was in former days may be understood when it is known that the estate of the late Joshua Hendy, a successful machinist, and which, by the way, his heirs are now quarreling over, is worth about a million of dollars. Owing in large part to the strike, the year as a business one among the foundrymen has been a failure, although to this there are a few exceptions. The good work done by our shipyard, our rolling mill and some other institutions has done much to redeem the character of the year.

Trade in hardware and iron for the past two weeks has been pretty good, though as the year wanes the volume lessens imperceptibly, and with the close of November the fall trade will be practically over. However, when it has been late coming on it has continued often with hardly any perceptible diminution in its volume till the close of the year and it has even kept this way well on in January, and it may be so this year, as business did not open up actively until late.

Our imports of hardware by sea have of late been very large, the Mineola, the St. John and the St. Paul bringing heavy consignments. It now seems as though a large part of the hardware used on this coast will be imported from Atlantic cities via Cape Horn. It will be so to a verity unless railroad rates are reduced. More especially will this be the case should the new steam line from New York put on fast and powerful steamers. Great hopes are entertained that this will be done and that consignments can be landed at San Francisco in 60 days after leaving New York. Inasmuch as heavy freight by rail has ordinarily taken a month and often six weeks in transit, and sometimes in the winter much longer, there would not be so much difference in time after all. Such a state of things would be of the greatest possible benefit to the trade of San Francisco. Imports of iron by sea have been very heavy; 1250 tons of pig iron per Milton Park, Honresfeld, Waterloo and Hackfeld. Then the St. Paul had 25 tons of American pig iron. The vessels already named from English ports had 2600 tons of scrap iron. Then we had by the American vessels 660 tons of muck bars. A large quantity of merchant iron from English ports fitly rounds up the unusual imports of one week. It may be imagined from this that the pig-iron market is in a pretty demoralized condition The market, however, is nominally as I last advised you. Now that the molders' strike is over there may be some improvement in the demand

The close approach of the end of the year puts a virtual stop to all except speculative purchases of tin plate and pig tin. There is, however, no demand of any kind at present, outside of a small jobbing one. Spot prices for tin plate have declined, being now $6.50, while to arrive it is $6.10 to $6.15. The last steamer from Sydney brought no pig tin, which is very dull at 21 cents.

Arizona now boasts of a tin mine in the neighborhood of Phœnix. A successful test was made by the discoverers. The deposit is said to be almost inexhaustible. San Diego County in this State is also said to have very large and valuable deposits of this metal.

Imports by rail still continue large, For the past two weeks 22 cars of steel, 13 cars of iron, 37 iron safes, 5 cars of wire, 6 cars of hardware, 10 cars of machinery, 5 cars of agricultural implements, 5 cars of stoves, 15 cars of pipe, 4 cars of steel plates, 1 car of shovels, 1 car of plows, 1 car of ranges; total, 88 cars; 78,163 pounds of zinc, 7030 pounds of copper.

New Freight Rates.

The Queen and Crescent Route has issued Tariff No. 2, giving rates on iron and its products, except pig, from sections in the South to points in the North. Rates on the more important products and between some of the principal points are given below.

To	From Chattanooga, Tenn.		From Birmingham and Anniston, Ala.	
	Per ton, 2000 pounds.	Per ton, 2240 pounds.	Per ton, 2000 pounds.	Per ton, 2240 pounds.
	Cast iron pipe, C. L., 30,000 pounds min.	Muck or puddle bar, iron and steel blooms and billets, iron and steel rails and fastenings, scrap iron and old rails, C. L., 30,000 pounds min.	Cast iron pipe, C. L., 30,000 pounds min.	Muck or puddle bar, iron and steel blooms and billets, iron and steel rails and fastenings, scrap iron and old rails, C. L., 30,000 pounds, min.
Akron, Ohio	$3.50	$3.50	$4.00	$4.00
Allegheny, Pa.	3.90	3.90	4.40	4.40
Aurora, Ill.	3.85	3.85	4.10	4.10
Canton, Ohio	3.50	3.50	4.00	4.00
Chicago, Ill.	3.75	3.75	4.00	4.00
Cincinnati, Ohio	3.25	3.25	2.75	2.75
Cleveland, Ohio	3.50	3.50	4.00	4.00
Dayton, Ohio	3.00	3.00	3.50	3.50
Detroit, Mich	3.75	3.75	4.00	4.00
East St. Louis, Ill.	3.00	3.00	3.25	3.25
Evansville, Ind.	2.50	2.50	2.75	2.75
Joliet, Ill.	3.75	3.75	4.00	4.00
Louisville, Ky.	2.25	2.25	2.50	2.50
Memphis, Tenn.	2.00	2.00	2.00	2.00
Pittsburgh, Pa.	3.90	3.90	4.40	4.40
St. Louis, Mo	3.00	3.00	3.25	3.25
Terre Haute, Ind	3.00	3.00	3.25	3.25
Toledo, Ohio	3.50	3.50	4.00	4.00
Wheeling, W. Va.	3.90	3.90	4.40	4.40
Youngstown, Ohio	3.60	3.60	4.10	4.10
Zanesville, Ohio.	3.50	3.50	4.00	4.00

The Lakeside Nail Company of Hammond, Ind., have purchased from the Illinois Steel Company all the nail machines in their factory at Milwaukee, and will at once remove them to Hammond. The Milwaukee nail factory has not been in operation for some years, but the machines are understood to be in good condition. The addition of these machines to the Lakeside factory will give Lakeside Nail Company over 200 machines, making them rank among the largest producers of cut nails in the country, but one other company having a larger capacity so far as known. The success attending the operations of the Lakeside Nail Company may truly be regarded as phenomenal. They undertook the manufacture of cut nails in a time of great depression, and, unaided by any boom, but purely as a result of careful business management, they have built up a trade which has of late crowded their facilities to the utmost. They now double their capacity, and it may be well understood that they have not made such an important move without seeing their way clear to the profitable operation of their increased plant.

Selden T. Scranton of Oxford Furnace, N. J., died at his home Monday night of apoplexy, in the seventy-eighth year of his age. He was a brother of the late Col. Charles Scranton, and was identified with the early settlement of Scranton, Pa., and Oxford Furnace. He was one of the founders of the Oxford Iron Company, of which he was a principal manager for many years.

The Muskegon Iron and Steel Company of Muskegon, Mich., have completed their open-hearth steel plant and expect to start it up in regular operation on the 30th.

TRADE REPORT.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., November 24, 1891.

The week opens more buoyantly in some respects, although there is by no means any great enthusiasm. There is a better demand, nevertheless, and there is less difficulty in securing quoted rates than for some time past. The exception is Steel Billets, which are extremely weak, and said to be offered at the lowest prices on record, say $26 @ $26 25, delivered in the immediate vicinity. With this one exception the market looks better, there is more business and at steadier prices, while the number of inquiries and the general outlook promise well for the near future.

Pig Iron.—A somewhat better tone pervades the market, and although the offerings are large, prices appear to be quite steady. Sales have been on a liberal scale, and include all grades, from the lowest at about $14 ℔ ton up to the highest at $17.50 @ $17.75, Philadelphia, and at slightly lower figures for deliveries at points South or West. Considering the very large output of Iron, the market is showing remarkable strength, so much so that any material increase in the demand would be likely to develop a tendency toward higher figures. At all events, with a larger output than at any previous time, prices are so firm that bids of 25¢ below ordinary quoted rates attract very little attention. It is true that prices are at an extremely low point, but it is not much more than a dozen years since they were even lower than they are to-day, with only about one-third of the production, so that, unsatisfactory as the position may be, there are very few in the trade but have seen much worse times than these, while it may well be doubted if they ever saw a brighter outlook than that of the present. Makers of Pig Iron have undoubtedly hard work to get their money back at present prices, but taking into account the large number of new furnaces competing for businese, it is surprising how well the market has been sustained. Entering, as the country undoubtedly is, on a period of greater expansion in business than ever before, it is not unreasonable to expect that the vast production of Iron will be absorbed just as easily as half the quantity was absorbed five or six years ago, or one-third of the quantity 12 or 14 years ago. When that fact becomes thoroughly established, prices will naturally be adjusted in proportion. They are not likely to be very much higher, but the tendency will be in that direction. The problem does not appear to be nearly as difficult as it did some time ago, for the reason that with a production of over 9,000,000 tons per annum, prices find a bottom at the figures ruling now and for some months past. This being established, the next question is in regard to consumption. This, of course, cannot be definitely stated, but we venture the assertion that 95 per cent. of the most careful business men expect a considerably larger business in 1892 than in any previous year; and if this theory be correct, it is not risking much to say that prices will be better, and with such a demand as the facts seem to predicate, they may be better than even the most sanguine are inclined to predict. A few weeks of dullness may intervene before there is any very decided movement, but the course of the market during the past month or two indicates that those who are waiting for lower prices are not meeting with much success, and may be in some danger of being left if they wait much longer. Some good-sized lots have been taken recently, and, all told, the volume of business has been quite large, but at a wide range of prices. It is impossible to give exact details, as almost every transaction is a transaction by itself, depending on quantity, brand, terms of payment, point for delivery and similar considerations, but the following list of quotatations are a fair average of the market, with a possible 25¢ less for some brands for such deliveries as Baltimore, York or Harrisburg:

Ohio Sofeners, No. 1x	$18.75	@	$19.00
Ohio Softeners, No. 2x	17.75	@	18.00
Standard Penna, No. 1x	17.75	@	18.00
Standard Penna, No. 2x	16.00	@	16.50
Medium Penna, No. 1x	17.00	@	17.50
Medium Penna, No. 2x	15.75	@	16.00
Virginia, No. 1x	17.00	@	17.25
Virginia, No. 2x	15.50	@	16.00
Standard Neutral All-Ore Forge	14.25	@	14.75
Ordinary Forge Cinder mixed	13.50	@	14.00
Hot-Blast Charcoal	20.00	@	22.00
Cold-Blast Charcoal	24.00	@	27.00

Muck Bars.—The market is extremely dull, and in some cases makers are very anxious to realize. A fair average of asking prices would be $26.50 @ $27, delivered, but Bars could be had at less money if firm offers were forthcoming.

Ferromanganese.—There is some inquiry, and it is not unlikely that good-sized lots may be taken. There are sellers at $61.50 @ $62, duty paid, for 80 %, but consumers talk lower figures than these.

Steel Billets.—The market is very unsettled, with rumors of quotations much below any that have hitherto been mentioned. Without making a firm offer, it is impossible to say what prices really are, but $25.50 has been bid for 1000-ton lots of Nail Slabs for delivery in the Schuylkill Valley, with sellers at $26.25. Whether it will result in business or not remains to be seen, but there is an undoubted urgency to sell, and it is just possible that the figure asked may be shaded a little so as to secure immediate business. Some makers refuse to consider any such prices as above named, but meanwhile the market is made by those who do business, and not by those who stand off.

Steel Rails.—There are no new features and nothing to indicate much change in the immediate future. A fair run of small orders is reported at $30, at mills, which, with those already on their books, imparts some degree of activity, although the mills have not as much work for forward delivery as could be desired.

P. S. We hear that the Erie Railway has just placed an order with two Pennsylvania companies for 20,000 tons at $30, f.o.b. cars at mill.

Bar Iron.—There is an improved feeling in this department, due in some measure to the expectation of a heavy demand from car builders. The Pennsylvania Railway Company will distribute orders for 5000 cars within a few days, and, as other roads must of necessity order soon, there is a strong probability of the Bar mills having all the work they can handle. Prices are not as favorable as could be desired, but if there is plenty of work, prices will not be long before they are adjusted in proportion. Meanwhile 1.65¢ @ 1.70¢, at interior points, appears to be the usual asking price, 1.70¢ @ 1.75¢ for city deliveries, but lower prices than these have been named when the order was strictly gilt edged.

Plates.—There is quite a fair general demand, but nothing very heavy individually. Boiler and tank work is calling for a good deal of material, but heavy work, such as bridge and ship specifications, is not developing as could be desired, although there is something on hand yet from former orders, and mills are comfortably full for the present. Prices are steadier, and while no one feels like asking more money there is certainly less disposition to make such deep cuts as were made a few weeks ago. Ordinary quotations are about as follows:

	Iron.	Steel.
Tank Plates	1.90 @ 2.00¢	2.00 @ 2.10¢
Refined	2.20 @ 2.30¢	2.10 @ 2.20¢
Shell	2.30 @ 2.40¢	2.25 @ 2.35¢
Flange	3.20 @ 3.30¢	2.50 @ 2.75¢
Fire-Box	4.00 @ 4.25¢	3.00 @ 3.50¢

Structural Material.—Nothing new has been presented recently. Mills are moderately busy on old contracts, which, with the usual run of small orders, enables manufacturers to about hold their own, but they are not accumulating business, so that prices are a little weak, although usually quoted about as follows: Angles, 1.95¢ @ 2.05¢; Sheared Plates, 1.90¢ @ 2¢, and in some cases equal prices, to about $\frac{1}{10}$¢ more, for Steel, according to requirements. Tees, 2.4¢ @ 2.5¢; Beams and Channels, 3.1¢ for either Iron or Steel.

Sheets.—There is quite a good demand for thin Sheets, and some call for the heavier descriptions, but not as much as could be desired. Prices are steady, and for the best makes are quoted about as follows:

Best Refined, Nos. 14 to 20	3.00¢ @ 3.10¢
Best Refined, Nos. 21 to 24	3.10¢ @ 3.15¢
Best Refined, Nos. 25 to 26	3.20¢ @ 3.30¢
Best Refined, No. 27	3.40¢ @ .....
Best Refined, No. 28	3.50¢ @ .....

Common, ¼¢ less than the above.

Quotations given as follows are for the best Open-Hearth Steel, ordinary Bessemer being about ¼¢ lower than are here named:

Best Soft Steel, Nos. 14 to 20	3¢ @ 3¼¢
Best Soft Steel, Nos. 21 to 24	3¼¢ @ ....
Best Soft Steel, Nos. 25 to 26	3¾¢ @ ....
Best Soft Steel, Nos. 27 to 28	4¢ @ ....

Best Bloom Sheets, ¼¢ extra over the above prices.

Best Bloom, Galvanized, discount	@ 67½ %
Common, discount	@ 70 %

Old Material.—The demand is improving, and while there is still some irregularity in prices, holders as a rule are inclined to be firm at about the following figures: Iron Rails, $21.50 @ $22.50; Steel Rails, $16 @ $17, delivered; No. 1 Railroad Scrap, $20.50 @ $21, Philadelphia, or for deliveries at mills in the interior $20.50 @ $21.50, according to distance and quality; $14.50 @ $15.50 for No. 2 Light; $14 @ $14.50 for best Machinery Scrap; $13.50 @ $14 for ordinary; $14.50 @ $15.50 for Wrought Turnings; $10 @ $10.50 for Cast Borings, and nominally $23 @ $25 for Old Fish Plates, and $16 @ $16.50, delivered, for Old Car Wheels.

Wrought-Iron Pipe.—Manufacturers are firm in their prices, but jobbers are still cutting, and probably will continue doing so until old stocks are exhausted, after which it is expected that uniform rates will prevail. Meanwhile, subject to concessions as stated, discounts are as follows:

Butt-Welded Black	57½ %
Butt-Welded Galvanized	47½ %
Lap-Welded Black	67½ %
Lap-Welded Galvanized	55 %
Boiler Tubes, 2½ inch and under	52½ %
Boiler Tubes, 3 to 6 inch	60 %
Boiler Tubes, 7 inch and larger	55 %

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, November 25, 1891.

Pig Iron.—There has been no animation in the Iron trade during the week, and not enough business has been done to test the strength of the market. It is claimed that buyers could make purchases for the first half of next year at lower prices than have prevailed, but there is no such urgency to sell as to warrant any lower quotations. There have been sales of Foundry Iron running from one to ten carloads, but the aggregate was no large, and there were many for curren delivery for this year, and at price which seem to justify former quotations

but concessions may have been made in some instances. Small quantities of Southern Car Wheel Iron have been sold, for which pretty full prices were obtained. There continue to be complaints of the scarcity of cars in the South and many furnaces are unable to make prompt deliveries on contracts, but on the other hand there are applications to defer deliveries, although perhaps not to more than the usual extent. On the whole, the outlook is not especially discouraging, for it is believed that the condition of the country justifies the expectation that there will be an enlarged consumption of Iron, as indeed there has already been, or the enormous production could not have been so closely sold up as it has been. But the increased demand does not come fast enough to satisfy producers. The temporary lull in the demand is not a certain indication of weakness, and when the demand revives it may find a more confident feeling, for that appears to be the logical outcome of the abundant crops and the more abundant supply of money in the country.

Foundry.

Southern Coke, No. 1	$15.25 @ $15.75
Southern Coke, No. 2	14.00 @ 14.50
Southern Coke, No. 3	13.25 @ 13.50
Ohio Soft Stone Coal, No. 1	16.50 @ 17.00
Ohio Soft Stone Coal, No. 2	15.50 @ 16.50
Mahoning and Shenango Valley	17.00 @ 17.50
Hanging Rock Charcoal, No. 1	20.00 @ 21.00
Hanging Rock Charcoal, No. 2	19.00 @ 20.00
Tennessee and Alabama Charcoal, No. 1	16.50 @ 17.00
Tennessee and Alabama Charcoal, No. 2	15.50 @ 16.00

Forge.

Gray Forge	12.75 @ 13.00
Mottled Neutral Coke	12.25 @ 12.50

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	19.25 @ 19.75
Hanging Rock, Cold Blast	25.00 @ 26.00
Lake Superior Car Wheel and Malleable	18.75 @ 19.25

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, November 25, 1891.

Pig Iron.—From present appearances Pig Iron seems destined to be a dead weight on the market. The trade of next year may come up to the expections of the most hopeful and perhaps manufacturing facilities of every kind may be taxed to their utmost to supply the demand, but for the present there is no getting away from the fact that too much Pig Iron is being produced. The output is so much in excess of the consumption now that curtailment seems to be absolutely necessary. A period of dullness is upon the trade which may continue well into next year, and furnace owners who can stop production would be acting wisely in doing so. If all the furnaces making Pig Iron for the general market could be banked for but 30 days the situation would be greatly improved. Every furnaceman, however, is hoping that his competitors will drop out of the race, and the result will be still lower prices until somebody is forced to the wall. If the present condition of trade lasts for three months, and it may continue all of that time, considerable financial weakness must develop which will injure the whole trade. Prices have already given way in the market and there is no telling where they will stop if heroic measures are not soon adopted. The demand for Coke Iron is confined to small lots for immediate delivery. Inquiries are occasionally made for deliveries scattered through next year, but consumers seem to think they should not be obliged to pay present prices. Southern Coke is lower in price, and sales agents are submitting offers considerably under quotations, in the hope of having them accepted by their principals. Inquiries for Lake Superior Charcoal are being made by Car-Wheel makers, who are inclined to take in round lots, but at bargain prices. Quotations are as follows, f.o.b. Chicago:

Lake Superior Charcoal	$16.75 @ $17.25
Local Coke Foundry, No. 1	15.50 @ 16.00
Local Coke Foundry, No. 2	14.75 @ 15.00
Local Coke Foundry, No. 3	14.25 @ 14.75
Local Scotch	16.00 @ 16.50
Ohio Strong Softeners	17.75 @ 18.25
Southern Coke, No. 1	15.50 @ 16.00
Southern Coke, No. 2	14.75 @ 15.00
Southern Coke, No. 3	14.00 @ 14.25
Southern, No. 1, Soft	15.00 @ 15.50
Southern, No. 2, Soft	14.25 @ 14.50
Southern Gray Forge	13.75 @ 14 00
Southern Mottled	13.25 @ 13.50
Tennessee Charcoal, No 1	18.00 @ ...
Alabama Car Wheel	20.50 @ 21.50
Coke Bessemer	16 50 @ 17.00
Hocking Valley, No. 1	17.00 @ 18.50
Jackson County Silvery	17.50 @ 18.00

Spiegeleisen.—Market quiet, but quotations are maintained.

Bar Iron.—This branch of the trade is in much better shape than Pig Iron. Car orders are coming forward in fair quantities, and sales of 1000 tons or more are reported with pleasing frequency. Inquiries from manufacturing consumers in other lines are springing up, one of them covering 500 tons, with a prospect of heavier business later. The Mahoning Valley mills would appear to be very busy, as complaints are numerous of delayed shipment on old contracts. Prices are quite firm at about 1.70¢, half extras, Chicago, on ordinary specifications.

Structural Iron —Mill agents are booking a moderate amount of business in the line of bridge work, while a great deal of material has been placed under contract for building purposes; prospects are excellent in the way of new office buildings, freight warehouses and train sheds, which will in the aggregate require a great deal of material. Building projects of importance are already looking up for next year. Steel Angles are selling at less than 2¢, Chicago, but Specification Angles cannot be had for much less than 2.15¢. Universal Plates are offered at 2.12½¢; Beams and Channels are unchanged.

Plates.—Demand is still irregular, a few sales of a carload to 500 tons being reported, but with very little business in sight. The business from stock is somewhat better than it has been, as the boiler shops are better employed. Carload lots of Tank Steel irregular at about 2.20¢, and Flange Steel 2.60¢, Chicago. Tubes are weak; store prices unchanged.

Sheets.—Black Sheets are now moving very freely from jobbers' stocks as a result of the cold weather. Manufacturers' agents also report an improved demand, with quite a trade in No. 30 Common Black. No. 27 is quoted 2.95¢ from mill and 3.20¢ from store. Galvanized Iron is in brisk demand, and mill agents cannot fill all their orders. They are substituting sizes and borrowing from each other in order to keep their customers supplied with material. Juniata is quoted at 65 and 10 % in a jobbing way.

Merchant Steel.—Trade is quiet in this line.

Track Supplies.—The mills here are well supplied with orders for the winter, and inquiries continue to come in for next year, making the manufacturers feel well satisfied with the prospects for 1892. Prices are continued on a basis of $31 and upward, according to the character of the order. Large contracts have been made for Splice Bars, and more are in sight. Prices are about 1.80¢ @ 1.82½¢; Track Bolts with Hexagon Nuts are quoted 2.70¢ @ 2.75¢, and Spikes 2.15¢ @ 2.15½¢.

Old Rails and Wheels.—The Old-Rail market is flat. Numerous lots of Iron Rails are offered, but consumers are well supplied. Dealers have bid $21.75, which railroads have refused. Old Steel Rails are nominally quoted at $14 @ $16, with no transactions. A sale of 1000 tons of Old Car Wheels is reported at $16. Carload lots are quoted $16.50.

Scrap.—Dealers report only light sales and that to consumers at outside points. They quote selling prices as follows per net ton: No. 1 Railroad, $18; No. 1 Forge, $17.50; Horse Shoes, $18; Car Axles, $22; Fish Plates, $20; No. 1 Mill, $13; Pipes, $12.50; Sheet Iron, $8; Cast Borings, $7.50; Wrought Turnings, $11; Axle Turnings, $12; Machinery Cast, $11.50; Malleable Cast, $9; Stove Plate, $9.50; Mixed Steel, $11; Coil Steel, $14; Leaf Steel, $15; Steel Tires, $16.

Metals.—Carload lots of Lake Copper are still quoted 11¼¢, but casting brands have gone off to 11⅛¢. Some inquiries are reported, but sales are light. Spelter is still quoted 4.70¢, but it can be bought a trifle lower. Dealers in Pig Lead report that with the exception, possibly, of one refiner, the production is pretty well sold ahead to late December, leaving the key to the situation in the hands of one or two holders. So far as can be learned, no consumer is suffering for Lead and the demand for spot is caused by reason of non-arrivals. Sales for the week will foot up about 400 tons at and around 4.05¢.

L. S. Boomert & Co., 647 Rookery Building, Chicago, have been appointed sales agents for the Structural Material manufactured by the Cambria Iron Company. The company are now prepared to furnish Steel Angles of all descriptions, from 1½ x 1½ inches up to 6 x 6 inches; Channels of 9 to 12 inches, Carnegie Sections; Car Channels of Pennsylvania and Illinois Central standard, and are preparing for all Channels from 4 to 8 inches, and I Beams up to 10 inches.

New York.

Office of *The Iron Age*, 96-102 Reade street, NEW YORK, November 25, 1891.

American Pig.—Commission merchants generally report the market very dull, with very few customers ready to purchase supplies beyond immediate requirements. There is some complaint of low prices made by some of the new Virginia furnaces in New England, No. 1, for instance, being offered at Providence for $16. G. B. Clarke, president of the Thomas Iron Company, reports that practically he has on his books, for delivery next year, between 30,000 and 40,000 tons, among the consumers who have placed orders being concerns who until lately have claimed that they could do as well on the cheaper irons. Southern Car-Wheel Iron is still offered at low figures, and may be quoted $18.50 @ $19 here. We quote Northern brands, $16.75 @ $18 for No. 1; $16 @ $16.50 for No. 2, and $14 @ $14.50 for Gray Forge. Southern Iron sells at $16.25 @ $17 for No. 1; $15.50 @ $16 for No. 2; $14.50 @ $14.75 for No. 3 Foundry, and $14.25 @ $14.50 for Gray Forge.

Spiegeleisen and Ferromanganese.—No business of any account is reported by sellers, and the market continues nominal at $23 @ $24 for 10 % to 12 %, $27 @ $28 for 20 % Spiegeleisen, and $62 @ $63 for 80 % Ferro.

Billets and Rods.—No business whatever is reported in this market, either in foreign or in domestic material. We quote: Domestic Billets, $26.75 @ $27.50, delivered; foreign Billets, nominally, $31 @ $31.50, and domestic Rods, $36.50 @ $37.50, tidewater.

Steel Rails.—Aside from a few small lots ranging between 1000 and 2000 tons each, nothing has been done by Eastern mills during the week under review. The business in sight is moderate, and no immediate increase is looked forward to. There have been further sales in the West, but the details are being withheld.

Among the sales which went to make up the aggregate of 175,000 tons reported in our last issue as taken by the Western mills we may note the following: Chicago, Burlington and Quincy, 35,000 tons; Chicago and Northwestern, 40,000 tons; Chicago and Rock Island, 16,000 tons. Quotations remain unchanged at $30 @ $30.50. Eastern mill, standard sections.

Manufactured Iron and Steel.—The most encouraging news of the week is the report of the placing of large car orders and of considerable business pending in the same line. It is stated that the Pennsylvania Company have placed between 4000 and 5000 cars with works outside of its own establishments; that the West Shore Company are in the market for 1000 cars; that the New York Central Railroad will soon place a very large order with works outside of their own establishments, and that the Missouri Pacific have ordered 500 cars. The amount required for a car is variously estimated at 6 to 8 tons, so that in the aggregate the orders placed and pending for cars will call for a large amount of material. No large contracts for Plates have been placed lately, the building of a large number of ships being in abeyance until the post-office authorities have reached a decision on the bids for ocean postal service. It is known that within a short time several large contracts for structural material for architectural work will come up in this market. Nothing, however, of magnitude has been placed during the week and there have only been a few sales of small lots of foreign Beams, German sections. We continue to quote: Angles, 1.90¢ @ 2.10¢; Sheared Plates, 1.85¢ @ 2.25¢; Tees, 2.40¢ @ 2.75¢, and Beams and Channels, 3.1¢, on dock. Steel Plates are 1.9¢ @ 2.1¢ for Tank; 2.15¢ @ 2.30¢ for Shell; 2.40¢ @ 2.65¢ for Flange; 2.60¢ @ 2.75¢ for Marine, and 3¢ @ 3.25¢ for Fire Box, on dock. Bars are 1.7¢ @ 1.9¢, on dock. Scrap Axles are quotable at 2.15¢ @ 2.20¢, delivered. Steel Axles, 2.15¢ @ 2.25¢, and Links and Pins, 2.15¢ @ 2.20¢; Steel Hoops, 2¢ @ 2.5¢, delivered.

Track Material.—We quote 2.15¢ @ 2.25¢ for Spikes, 1.70¢ @ 1.90¢ for Fish Plates, and 2.80¢ @ 3¢ for Bolts, delivered.

Merchant Steel.—We quote Hot-Rolled Shafting 2¢ @ 2.10¢; Machinery, 2.10¢ @ 2.25¢; Tire, 2.15¢ @ 2.25¢, and Toe Calk, 2.20¢ @ 2.30¢, delivered.

Old Material.—The market is lifeless, with Old Rails nominally at $20 @ $21.

Metal Market.

Copper.—The market for Lake Superior Ingot remains in more or less unsettled condition. On the part of the representatives of the leading producers a certain degree of indifference is assumed and the principal consumers, it would appear, are equally as indifferent. Digging below the surface, however, some evidence of the disposition to get together at about 11¢ for deliveries running through the first quarter of next year is discovered, and the indications are that a liberal sized deal will be effected at that price. That something of the kind has actually been consummated is suspected. Outside holdings to the extent of 50,000 to 75,000 pounds were disposed of at 11¢ and that rate doubtless fairly reflects market value at this writing, although 11⅛¢ @ 11¼¢ is generally quoted by sellers. For casting brands the nominal price is 10¾¢, but both the demand and the supply available for early delivery are so light that other than purely "nominal" prices cannot be arrived at. In some instances Arizona Ingot has been delivered on contracts for ordinary casting stock, owing to inability to secure the latter, and it is not likely that the cheaper article will be more plentiful for some little time to come.

Pig Tin.—The record of speculative trading makes a somewhat imposing exhibit, involving as it does about 400 tons, and prices have fluctuated enough to excite some interest. Still, it does not appear that other than the regular traders have ventured, and the latter have done more in the way of closing up old deals than engaging in new ones. In other words, it has been strictly a traders' market, in which neither side scored any decided advantage. Stocks here are still quite heavy, the consumptive demand is moderate, as usual at this season of the year, and London manipulations help to aggravate the situation. Lots of 10 to 25 tons have been sold at as high as 20.15¢ for prompt and near future, but subsequently receded to 20¢ @ 20.05¢. Ordinary jobbing parcels moved at 20.15¢ @ 20.35¢, according to terms and size of lot. At the close the market looked fairly steady.

Pig Lead.—Following the sales of 300 tons at 4.30¢ (not 3000 tons, as an error of the types made it read), noted in our last review, about 100 tons were disposed of at 4.35¢, and subsequently about 300 tons went at down to 4.30¢. These purchases seem to have satisfied the wants of anxious buyers in a great measure, and the market is momentarily quiet. The fact that spot supplies turn out to have been smaller than was supposed still lends more or less support, however, and smelters are indifferent sellers of stock for delivery during the balance of the year or further ahead.

Spelter.—Western brands are offered in carload lots, early shipment, at 4¼¢ @ 4.80¢, delivered at this and other Eastern points. These low prices fail to stimulate purchases on the part of galvanizers or Brass manufacturers, however, and the market remains dull as well as weak. Stocks in this market are not heavy, but the accumulations at the smelting works have been considerable during the past six weeks.

Antimony.—At the moment there is little or no demand except for small parcels, but supplies are well under control and prices firmly held. Hallett's is quoted at 12½¢, LX at 13½¢ @ 14¢ and Cookson's at 15½¢, in wholesale quantities.

Tin Plate.—Spot purchases have been confined chiefly to small parcels, and while the offering is not heavy or urgent, it keeps sufficiently ahead of the demand to admit of improvement in values. Some increase is noted in the demand for future shipment. Prices for this are, with few exceptions, now on a parity with those at which spot stock is selling, and prospects for a better business are more encouraging. We quote: Coke Tins—Penlan grade, IC, 14 x 20, $5.25; J. B. grade, do., $5.35; Bessemer do., $5.30; Siemens Steel, $5.45. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.75; Siemens Steel, IC basis, $5.85 @ $6; IX basis, $6.85 @ $7. IC Charcoals—Melyn grade, $6.50; for each additional X add $1.50; Allaway grade, $5.85; Grange grade, $5.90 @ $5.95; for each additional X add $1. Charcoal Ternes—Worcester, 14 x 20, $5.75; do., 20 x 28, $11.50; M. F., 14 x 20, $7.45; do., 20 x 28, $15; Dean, 14 x 20, scarce; do., 20 x 28, $10.70; D. R. D. grade, 14 x 20, $5.25; do., 20 x 28, $10.10; Mansel, 14 x 20, $5.50; do., 20 x 28, $10.40; Alyn, 14 x 20, $5.50; do., 20 x 28, $10.55; Dyffryn, 14 x 20, scarce; do., 20 x 28, $11.10. Wasters—S. T. P. grade, 14 x 20, $5; do., 20 x 28, $9.85; Abercarne grade, 14 x 20, $4.90; do., 20 x 28, $9.70.

New York Metal Exchange.

The following sales are reported:

FRIDAY, November 20.

25 tons Tin, November	20.0?¢
50 tons Tin, December	20.05¢
10 tons Tin, spot	20.05¢
25 tons Tin, January	20.10¢
25 tons Tin, November	20.10¢
25 tons Tin, December	20.10¢
25 tons Tin, November	20.15¢
35 tons Tin, December	20.15¢

SATURDAY, November 21.

20 tons Tin, December	20.15¢

MONDAY, November 23.

20 tons Tin (seller's option this week)	20.00¢
25 tons Tin, December	19.95¢
(Seller's right to double.)	
25 tons Tin, second half, December	20.05¢

Financial.

The general business situation is good and the outlook encouraging. In trade circles money is reported as coming more freely from interior points, indicating that merchants are beginning to feel the effects of good harvests and the larger amounts of currency in circulation. The South has severely felt the pressure caused by low prices realized for cotton, but now she is gaining and planters ask less frequently for advances. A reduced quantity of goods has been purchased for water transportation, as navigation is nearing a close. The event of the week is the issue of the Russian ukase prohibiting the exportation of wheat and wheat products, and the foreign demand for cereals will receive a new impetus. A source of embarrassment that may become serious is a shortage of cars for transportation. From South Dakota, Missouri and Iowa complaints are already frequent. As Mr. Depew said at the Chamber of Commerce banquet in this city, "there is to be a famine of cars, a famine of locomotives, a famine of the methods by which this enormous product which the fields of the country have produced may be conveyed to the sea and so go abroad, where is needed." These conditions, he said, are going to make railways more than usually prosperous in their net earnings; are going to lead to the construction of new lines of railway; are going to make a demand for iron, coal and coke. Making due allowance for flowers of rhetoric, the prophecy, there is reason to believe, will be literally verified. The gross amount of railroad earnings for September shows a gain of $4,500,000 as compared with the same month last year, and the net increase was 10.32 per cent.

In the markets for general merchandise speculation is usually within moderate bounds. Cotton exports are very heavy, larger than for the same time last year, and prices have partly recovered from the recent depression to 8.06¢ ℔ lb. Hog products are going out more freely, so that stocks are worked down. Sugars are quoted higher. Coffee is unsettled over the news from Brazil. Dry goods jobbers are more quiet.

The stock market was dull, with some selling on European account, and most of the business done was of a professional character. On Friday there was a decided advance in the Vanderbilts, New York Central leading, and the tone was strengthened by advices that Russia had at last issued a decree prohibiting the export of wheat. It was also stated that the most disturbing factor in the Continental situation had been removed, and that the Rothschilds had agreed to relieve the French syndicate which undertook to float the Russian loan. One feature was a rise in sugar refiners based upon reports that the political troubles in Brazil and the reduction in the German beet sugar crop are likely to make the business of the refining company more profitable. Distillers advanced on the supposition that the Russian ukase would prove detrimental to rivals in

Germany and benefit in a corresponding degree producers in the United States. On Saturday the buoyant feeling was again manifest, with some reaction. National Cordage advanced. On Monday about the only feature was a rise in Chicago and Northwestern on a report that the earnings for three months to October 31 were the largest in the history of the company.

Government bonds were strong, at quotations as follows:

U. S. 4½s, 1891, extended	100
U. S. 4s, 1907, registered	116¾
U. S. 4s, 1907, coupon	116¾
U. S. currency 6s	111

Coal Market.

The Anthracite Coal trade is dull and unchanged. Only in some instances are September prices realized. The small steam sizes are particularly weak, these being produced relatively in greater proportion when the larger sizes are put out in excess. Pea sells at $2 @ $2.50 ₹ ton, f.o.b., with about $2.15 the going rates Buckwheat is $1.50 @ $1.75 ₹ ton, f.o.b. September prices are: Free Burning Broken, $3.65; Egg, $4; Stove, $4.25; Chestnut, $3.90; Lehigh Broken is $3.90; Egg, $4.15, f.o.b.; Stove and Chestnut same as Free-Burning. Lehigh producers also complain of a weak market.

The total production for the week ending November 14 was 1,038,013 tons, compared with 888,548 tons in the corresponding week last year, an increase of 149,465 tons. The total amount of Anthracite mined thus far in the year 1891 was 34,733,317 tons, compared with 31,116,027 tons for the same period last year, an increase of 3,617,290 tons.

The Lehigh Valley Coal Company are reported to have had agents at work in the upper Anthracite fields for some time past negotiating with individual operators and mine owners for the purchase of the entire output of their collieries.

The official statement of the Anthracite Coal tonnage for October shows that the production for that month was 4,496,534 tons, which is the largest output ever made in a single month, and is 603,817 tons more than was mined in October, 1890. Hitherto October, 1888, with a production of 4,187,527 tons, has been the banner month. If the tonnage is 4,000,000 this month and 3,000,000 in December, the output for the year will be 40,000,000 tons, and is likely to be slightly over that amount. The stock of Coal at tide increased very little last month notwithstanding the enormous product. It is almost exactly the same as it was last year, and it is less than it was in November or December, 1890. The following is the apparent consumption of Coal for the month of October and for the year to date:

	Oct.	Y'r—10 mo.
Stocks on hand	568,883	535,652
Production	4,496,534	32,732,807
Total supply	5,065,367	34,268,459
Stocks October 31	635,446	635,446
Total	4,429,921	33,633,013

As prices have been above those of last year, all the companies ought to have made a handsome increase in earnings over 1890.

The following is the percentage of tonnage shipped by the regions this year:

	Sch'kill.	Lehigh.	Wyom'g.
For ten months	31.09	15.93	52.98

It will be seen that the Wyoming and Schuylkill regions have increased in almost exactly the same ratio, and they have gotten back to about the percentages previous to the strike. The Lehigh has fallen off somewhat.

At the meeting of the representatives of the Coal producing companies on Tuesday it was decided to curtail the production to 3,250,000 tons for the month of December, against 4,000,000 allotted for the current month. Respecting the apprehended allotment of tonnage for next year, a Philadelphia paper usually well informed says "When the presidents of the Coal-carrying companies meet to make the allotment for 1892 there will be present a representative of the Reading, who will be there solely for business and the good of the trade. This has not been the case at any previous meeting for a period of about 22 years. Under such circumstances it would seem there would be less danger of a fight than at any time for nearly a quarter of a century." Nevertheless, it is well understood that the Reading intends to secure a larger share of the trade as a financial necessity.

Imports.

Hardware, Machinery, &c.

Boker, Hermann & Co., Arms, cs., 16
Borgfeldt, Geo., Hdw., cs., 70
Claflin, H. B. Co., Mach'y, pgs., 5
Fox, W. B. & Bro., Arms, cs., 2
Graef Cutlery Company, Cutlery, cs., 17
Hartley & Graham, Arms, cs., 4
Kastor, Ad., Cutlery, cs., 10
Meacham Arms Co., Arms, cs., 23
Murphy, Alexander & Co., Ironware, cs , 38
Ringeisen, Jacob, Mach'y, cs., 4
Schoverling, Daly & Gales, Arms, cs., 40
Schwarzenbach, Huber & Co., Mach'y, cs., 16
Stone, Chas. B., Mach'y, cs., 7
Ward, Jas. E. & Co., Hdw., pgs. 21 ; do., cks., 6
Werlemann, H., Arms, cs., 9
Wyman, Chas. H. & Co., Arms, cs., 8
Order—Arms, cs., 18; Mach'y, pgs., 10.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building,
PITTSBURGH, November 24, 1891.

Pig Iron.—There has been no decided change in the situation during the past week as regards the local market; a continued good degree of activity has obtained, with, as intimated in our last report, sellers less disposed to sell and buyers more inclined to buy. Nearly all the city furnaces are sold ahead from two to three and even four months, and are not in position, even if so disposed, to make additional contracts, while furnaces in other districts usually tributary to this market are refusing to accept prices obtainable here. The feeling generally obtains that hard pan has certainly been reached, and it may be stated in this connection that Pig Iron never sold as low in this market as at the present time. A city furnaceman who is well posted avers that Bessemer Iron sold at $15, cash, delivered to city consumers, which is equal to about $14.75 at furnace, and Mill Iron at $13.50. These are the ruling prices at the present time. It is very evident that unless there is a change some of the furnaces will have to blow out, and thereby reduce production, which for some time past has been in excess of consumption. It is not strange that consumers are more disposed to buy, since there is a possibility that the market may unexpectedly take a turn on them. This feeling has caused consumers to cover their requirements for several months to come. Prices may fairly be quoted as follows:

Neutral Gray Forge	$13.50 @	$13.60, cash
White and Mottled	13.00 @	13.25, "
All-Ore Mill	14.00 @	14.50, "
No. 1 Foundry	15.50 @	16.00, "
No. 2 Foundry	14.75 @	15.00, "
No. 3 Foundry	14.25 @	14.50, "
No. 1 Charcoal Foundry	21.50 @	22.00, "
No. 2 Charcoal Foundry	20.50 @	21.00, "
Cold-Blast Charcoal	25.00 @	27.00, "
Bessemer Iron	15.00 @	15 25, "

Sales of Bessemer Iron reported the past week at $15 @ $15.25, cash. It is suspected that those selling at $15 were hard up for funds.

Muck Bar.—There is no improvement in the demand. There have been very few buyers for some time past. Brokers are offering freely to sell at $26, cash, and might be tempted to sell for less. Some of the mills, instead of being buyers of Muck, have considerable piled up at their mills.

Manufactured Iron.—There is but little new business at present, but the mills generally are pretty fully employed in working up former contracts. Business ordinarily drops off this month, and there is not likely to be much, if any, improvement until January. Some manufacturers have all they can do, while others are not so well situated. However, there is a good deal more complaint in regard to prices than demand. We continue to quote Bars at 1.67½¢ @ 1.70¢ here and 1.60¢, half extras, at the valley mills, 60 days, 2 % off for cash; No. 24 Sheet, 2 70¢, and Tank and Plate at 1.90¢ @ 2¢; Skelp Iron, 1.67½¢ @ 1.70¢ for Grooved, and 1.87½¢ @ 1.90¢ for Sheared, four months, 2 % off for cash.

Nails.—The Cut-Nail trade is reported dull, and no improvement is looked for during the remainder of the present year. We continue to quote $1.55 @ $1.60 for 30¢ @ 35¢ average, f.o.b. at factory, in the Wheeling or Mahoning Valley districts. The Wire-Nail trade is also reported dull, and it is averred that at present prices it is a question whether the maker gets a new dollar for an old one. We continue to quote at $1.75, f.o.b. at factory, 60 days, 2 % off for cash. Negotiations are still pending with a view to forming a syndicate of Wire-Nail manufacturers, and it is understood that another conference will shortly take place.

Wrought-Iron Pipe.—The dullness which has obtained for some time past continues, and there is but little prospect of any immediate improvement. While we continue to quote syndicate prices, they are not in all cases being adhered to. Discount on Black Butt Pipe, 57½ %; do. on Galvanized, 47½ %; on Black Lap Weld, 67½ %; on Galvanized, 55 %. Boiler Tubes, 2½-inch, inclusive, 55 %; 3-inch, 65 %; Casing, all sizes, 55 %.

Structural Material.—While there is not much new work being placed at present, the mills are still busy working up former contracts. Prices remain unchanged. Beams and Channels, 3.10¢; Angles, 2¢; Tees, 2.50¢ @ 2.60¢; Steel Sheared Bridge Plates, 2.10¢ @ 2.20¢; Universal Mill Plates, 2¢ @ 2.05¢; Refined Bars, 1.80¢ @ 1.85¢. There is a good deal of work in negotiation, but it is not likely that it will be placed until January or February.

Steel Plates.—There is still considerable inquiry, with manufacturers well sold up for near-by delivery. Prices remain unchanged, as follows: Fire Box, 3.65¢ @ 4.25¢; Tank, 1.95¢ @ 2.10¢; Shell, 2.15¢ @ 2.25¢; Flange, 2.35¢ @ 2.50¢

Merchant Steel.—There is a continued demand reported but prices remain unchanged, as follows: Crucible Tool Steel, 6¢ @ 7¢; do. Spring, 4¢; do. Machinery, 2.10¢, @ 2.20¢; Tire Steel, 2.10¢ @ 2.20¢; Toe Calk, 2.30¢ @ 2.50¢; Steel Bars, 1.75¢ @ 1.85¢.

Wire Rods.—There have been no sales reported in this market for several weeks, in the absence of which it is difficult to give reliable quotations.

Old Rails.—There is little or no demand for Iron Rails either here or in the valley districts, and prices may be quoted at $23 @ $23 50. There is some inquiry for Old Steel Rails, and short pieces may be quoted at $16.50 @ $17 and long pieces at $17.50 @ $18.

Billets and Slabs.—Steel Billets have sold lower than ever before; one lot of 5000 tons reported at $23.75, at maker's mill. Some of our manufacturers regard $24 as an

exceedingly low price and refuse to quote under $24.25 @ $24.50. Some sales were made at $25 @ $25.25, delivered at Cleveland, Ohio, which is equal to $23.75 @ $24 here.

Barb Wire — Continues quiet, while prices remain unchanged. Painted, $2.45, and Galvanized, $2.95, f.o.b. at factory, in Pittsburgh or Cleveland distrits.

Ferromanganese.—There is a fair demand, with sales of domestic 80 per cent. at $65, cash, which is about as low as foreign can be laid down here from seaboard.

Railway Track Supplies.—There is a continued steady demand, and prices are steady: Spikes, 2.15¢, f.o.b. at mill, 30 days; Splice Bars, 1.70¢ @ 1.80¢; Track Bolts, 2.65¢ with Square and 2.75¢ with Hexagon Nuts.

Steel Rails.—There is an increasing demand. Several good-sized contracts having been placed here within the past week. Price is firm at $30, cash, at mill. Carnegie Bros. & Co. made a shipment to-day of 6300 tons to New Orleans by river.

Old Material.—There is not much doing. Prices are without quotable change. No. 1 Railroad Wrought, $19.50, net; Cast Scrap, $13, gross ton. We note sales of Steel Rail and Bloom Ends at $18.

St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st., ST. LOUIS, November 28, 1891.

Pig Iron.—A feeling of gradual depression is making rapid progress in the iron trade. During the summer months, when trade was almost lifeless, the fall months were looked forward to as the time when prosperity would rule. It was explained that the enormous crops would then be gathered and that money would be very plentiful. The crops have been gathered, but the anticipated improvement is, for some unforeseen reason, delayed. Production of Pig Iron keeps increasing at an alarming extent, while consumption is only about holding its own. While this condition of affairs lasts any improvement in prices seems well-nigh impossible. Indeed, the question of sustaining prices at present ruling is a serious one and is causing the furnaces some uneasiness. Sales during the past week have been limited to very small quantities for immediate shipment. There were no transactions of any moment, and the outlook at the moment fails to indicate when the long expected improvement will set in. For ordinary-sized quantities we quote as follows for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry,	$15.25 @ $15.50
Southern Coke, No. 2 Foundry,	14.25 @ 14.50
Southern Coke, No. 3 Foundry,	13.50 @ 13.75
Gray Forge	13.00 @ 13.25
Southern Charcoal, No. 1 Foundry	17.00 @ 17.50
Southern Charcoal, No. 2 Foundry	16.50 @ 16.75
Missouri Charcoal, No. 1 Foundry	15.50 @ 16.00
Missouri Charcoal, No. 2 Foundry	15.00 @ 15.50
Ohio Softeners	17.75 @ 18.75

Bar Iron.—The market does not change to any extent. Inquiries are increasing and the outlook is considered encouraging for the balance of the year at least. Prices are unchanged, as follows: Lots from mill on cars at East St. Louis at 1.75¢; small lots from store at 1.85¢ @ 1.90¢, according to circumstances.

Barb Wire.—There is nothing new in this department. A fair demand is reported at unchanged prices. We quote as follows: Painted, 2.70¢; Galvanized, 3.20¢. Terms, 60 days, or 3 % discount for cash in ten days.

Wire Nails.—The volume of business during the past week has not been very large, although there seems to be less disposition to shade prices. Jobbers are buying in limited quantities, and the general feeling is one of improvement. Mills quote $1.95 for carload lots. Jobbers quote $2.10 @ $2.15 for lots from store.

(*By Telegraph.*)

Metals.—The latter part of last week an upward movement was experienced in Pig Lead and sales were made as high as 4.15¢. The movement seems premature, however, as lots for spot delivery are quoted to-day 4.10¢. Sales are light, about 150 tons changing hands at the latter figure. The consumptive demand is not heavy, however, and the chances are apparently against any further advance. Spelter continues in the weak condition noted last week. Sales have been made to-day at 4.40¢; offerings are free at from 4.40¢ to 4.45¢, with all-rail freight rates to New York of 29¢ and to Boston and near-by points 34¢. Consumers are not in the market and prices are dropping of their own weight.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, November 25, 1891.

Scotch Pig Iron warrants have ruled somewhat firmer, selling up to 47/6, and the market appears to be well in the hands of operators, who look confidently for better prices. Cleveland warrants have ruled a little steadier and Hematites quite firm under the influence of heavier buying for consumptive account. Latest sales of warrants were at 47/6 for Scotch, 38/7½ for Cleveland and 49/ for Hematite.

Under the influence of heavy buying on Friday prices for Pig Tin promptly advanced sharply, and the market is apparently under the control of operators working on the "bull" side. The position of spot supplies and stock afloat is in their favor, being little in excess of probable consumptive requirements for some time ahead.

Copper was depressed early in the week under weight of realizations, sales for "short" account and dullness in the market for mining shares. Indifference of consumers also had some effect. Consumptive demand has improved the past few days, however, and the market shows better form, although still irregular.

There is no change in the Tin Plate situation. Buyers' views on important quantities are still considerably below those entertained by makers, and business is still of moderate volume. Makers are discussing the advisability of another general stoppage of work and a meeting will be held this week at Swansea to discuss the matter.

Dealers in Old Iron assert that business has been done at prices above those generally quoted, and the market is in strong position statistically.

Scotch Pig Iron.—For makers' brands there is still a limited demand, and prices are easy:

No. 1 Coltness,	f.o.b.	Glasgow	57/
No. 1 Summerlee,	"	"	56/6
No. 1 Gartsherrie,	"	"	56/3
No. 1 Langloan,	"	"	57/
No. 1 Carnbroe,	"	"	48/6
No. 1 Shotts	"	at Leith	58/
No. 1 Glengarnock,	"	Ardrossan	56/9
No. 1 Dalmellington,	"	"	50/
No. 1 Eglinton,	"	"	50/

Steamer freights, Glasgow to New York, 1/; Liverpool to New York, 10/.

Bessemer Pig.—At modified prices there has been quite a large business. Makers quote 48/6 for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Cleveland Pig.—Business is of fair volume and the market steadier at 38/6 for No. 3 Middlesborough, f.o.b.

Spiegeleisen.—Demand runs light, and prices are still unsettled. English 20 % quoted at 82/, f.o.b. shipping port.

Steel Rails. — Prices remain unchanged, and the demand still moderate. Heavy sections quoted £4. 2/6 and light sections £5 @ £6, f.o.b. at N. W. England shipping point.

Steel Blooms.—There is very little doing and prices are nominal. Makers quote £4 for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—Sales still light and the demand moderate. Bessemer, 2½ x 2½ inches, quoted at £4. 5/, f.o.b. at N. W. England shipping point.

Steel Slabs.—A moderate business passing and prices nominal. Bessemer quoted at £4. 5/, f.o.b. at N. W. England shipping point.

Old Iron Rails.—Market quiet but sellers firm. Tees quoted at £3 @ £3. 2/6 and Double Heads £3. 2/6 @ £3. 5/, f.o.b.

Scrap Iron.—There is a fair demand. Prices steady. Heavy Wrought Iron quoted at £2. 10/ @ £2. 12/6, f.o.b.

Crop Ends.—Market quiet and unchanged. Bessemer quoted at £2. 12/6 @ £2. 15/, f.o.b.

Tin Plate.—Somewhat better inquiry at the close, but buyers and sellers apart. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	15/ @ 15/6
IC Bessemer Steel, Coke finish	13/ @ 13/3
IC Siemens " "	13/3 @ 13/6
IC Coke, B. V. grade	12/9 @ ....
Charcoal Terne, Dean grade	12/9 @ 13/

A meeting of the creditors of J. P. Witherow, engineer and contractor, of Pittsburgh, whose affairs were recently placed in the hands of a receiver, was held in the office of the firm in the Lewis Block of that city on Wednesday, the 25th inst., at 3 p.m. Mr. Witherow submitted to the creditors the following statement of his assets and liabilities:

LIABILITIES.

As at October 31, 1891:		
Open accounts	$87,774.45	
Bills payable	185,451.18	
		$273,225.63

ASSETS.

Open accounts, good, net amount	$51,485.47	
Doubtful and disputed accounts, $135,953.74, valued at	$62,349.58	
		$113,835.05
Sheffield Furnace Company, principal and interest, as per decree of the Supreme Court of Alabama, secured		82,864.08
Shares and stocks, $92,510, valued at		56,100.00
Value of raw material and sundry small implements at work		76,500.00
Bills receivable	$10,720.63	
Cash in bank	2,747.73	
		$13,468.36
Due on uncompleted contracts		25,547.06

NEW CASTLE WORKS.

Real estate	$50,000.00	
Buildings	72,250.00	
Machinery, &c.	278,710.00	
	$380,960.00	
Less C. Lockhart's mortgage	$750.00	
One year's interest	45.00	
		$301,460.00
Total		$669,774.55
Surplus		$396,548.92

The statement was received with much favor by the creditors, and in all probability the extension which Mr. Witherow has asked in order to meet his liabilities will be granted.

Important Sale of Rails.

(*By Telegraph from Philadelphia.*)

The Norfolk and Western have placed orders to-day for 15,000 tons of Steel Rails at $30, besides which large orders for cars are being distributed, said to be over 10,000 in all. Orders from the shipyards are also coming in, so that the outlook is much better.

HARDWARE.

Condition of Trade.

AS THE MONTH draws to a close there is apparently no increase in the volume of business, but a comparison with November of last year is not as unfavorable to the present season as might be supposed. Business, however, is only of moderate volume, and the trade are not anticipating an immediate improvement. The coming of cold weather has stimulated a demand for seasonable goods, and such lines as are connected with holiday trade are moving with some freedom. The tone of the market, as to prices, remains without important change, the fact being that on many lines prices are now as low as the goods can be afforded. The impression is general that stocks throughout the country are small, both wholesale and retail trade having purchased during the last few months with considerable caution and reserve. Manufacturers' stocks are as a rule moderate, and now at the close of the season the question naturally comes up as to whether it will be advisable to curtail production or to accumulate stocks. There is apparently on the part of manufacturers a disposition to pursue a conservative course in this regard. The expectation that next season's business will be of large volume has, however, its effect upon many manufacturers, who desire to be in good position to take care of their trade.

Chicago.

(*By Telegraph.*)

Shelf Hardware jobbers report a good business in progress. While it is not increasing, they are well satisfied not to have it fall off. The cold snap of last week stimulated the demand for some kinds of goods very decidedly, especially for everything connected with heating apparatus. The small stocks carried by country merchants is shown by their telegraphing orders for sheet iron, and in some cases directing it to be forwarded by express. Jobbers remark a general effort among manufacturers to stiffen prices, especially on staple goods, which have of late been almost unreasonably cheap. Heavy Hardware is active, and bids fair to continue so. Collections have shown great improvement and money is easy.

St. Louis.

(*By Telegraph.*)

The demand for Hardware is keeping up fairly well. The Southern trade is unusually dull, as is also the trade on the Pacific Coast. Local and Western trade, however, is very large, and jobbers have no reason to complain in this direction. There is cutting done in some lines, but on the whole prices are well maintained. Tin Plate is in much better shape, and there is considerable demand for winter goods from the Coast. Builders' Hardware is dull, but Shelf Hardware is in good demand. Skates are very good property just now, and are freely ordered. The cold weather continues and the general outlook is promising. Collections are slightly improved.

Notes on Prices.

Cut Nails.—The Nail market presents no new features, its condition not being changed in any material respect since our last report. The demand has been only moderate, but in the aggegate a good many Nails have been disposed of. Existing prices, although showing no increase in strength, are regarded by some as justifying the placing of orders for such Nails as may be required within the next few months, and as a result some good orders have been given. A good many buyers are, however, still holding off. Quotations are on a basis of $1.45 to $1.50 at mill for carload lots of Nails, either Iron or Steel, the former figures being given only on specially large or desirable orders. It is understood that this price has been slightly shaded in a few special cases. New York quotations are on a basis of $1.55 to $1.60 on dock, small lots being sold from store at $1.65 to $1.70. The production of Nails is somewhat reduced on account of the shutting down of some mills and the indisposition on the part of others to run to their full capacity.

Chicago, by Telegraph.—Steel Cut Nails are moving along about as they have been, with no special change either in demand or price. It is the intention of the Lakeside Nail Company to double their capacity, which will be done at once. This is a remarkable step in view of the condition of most of the Steel Nail factories, but it is regarded as warranted by the great growth in the company's trade. Factory lots are quoted at $1.65, Chicago, on 30-cent average. Jobbers are selling at $1.75 from store.

Wire Nails.—There has been no material increase in prices of Wire Nails, but there is apparently less anxiety on the part of manufacturers to secure orders at the extreme figures. As a result $1.70 is less frequently named, there being a disposition to hold pretty firmly at $1.75, which may now be regarded as the quotation in carload lots at mill. Manufacturers are selling less than carloads at an advance of 5 cents or 10 cents. Small lots from store command $1.90 to $2.

Chicago, by Telegraph.—Wire Nails are still to be had at about $1.90, Chicago, from factory, but the impression gains ground that an understanding is quietly being consummated among the manufacturers which will result before long in an advance. The gradual withdrawal of low prices by some of the most prominent sellers gives color to this presumption and the market will certainly bear watching at this time. Jobbers' prices are $1.95 to $2.05, according to character of the order.

Barb Wire.—The Barb Wire market continues regular and quiet. The demand is certainly moderate and prices are steadily maintained.

Chicago, by Telegraph.—The Columbia Patent Company are doing a large business now and report matters in very satisfactory shape. They have made no change in their schedule of prices and decline to state that an advance is contemplated, but the trade need not be surprised if a higher schedule should be issued very shortly.

Strap and T Hinges.—In view of the policy adopted by the manufacturers, as announced in our last issue, orders for Strap and T Hinges have been coming in very freely, and the large trade are covering their wants for some time to come.

Circular Saws, &c.—A meeting of the manufacturers of Circular Saws and other Mill Goods was held in Chicago last week, the object of the gathering being to consider the matter of the revision of list prices with a view to correcting some irregularities. As a result of their conference a few changes were made in existing lists, among which may be mentioned advances in the list prices of some small sizes of Circular Saws, with reductions in larger sizes. No change was made in discounts or terms and it is understood none is contemplated. The object of the association is to secure uniformity of list prices and to take other action which may be to their mutual interest, without, however, controlling prices.

Hand Bells.—An advance of 10 per cent. has been made by the associated manufacturers in the prices of Light Hand Bells. For some time the market in these goods has been in a satisfactory shape, the advanced prices which were adopted by the association having been well maintained and the way prepared for the further advance which is now announced.

Indurated Fiber Ware.—Under date 16th inst., Cordley & Hayes, 173 and 175 Duane street, New York, announce the following revised prices, which are subject to a discount of 25 per cent.:

Wash Tubs, page 11.

	No. 0.	No. 1.	No. 2.	No. 3.
Per dozen	$24.00	21.00	18.00	15.00

Wash-Tub Nests, page 11.

	No. 0.	No. 3.	No. 1.	No. 8.	No. 6.
Per nest	$6.55	5.25	4.55	9.45	7.55

Sitz Tubs, page 14.

	No. 0.	No. 1.	No. 2.
Per dozen	$25.00	22.00	19.00

Store Show Tubs, page 25.

	No. 0.	No. 1.	No. 2.
Per dozen	$25.00	22.00	19.00

Florists' Vases, page 22.

	No. 0.	No. 1.	No. 2	No. 3.	No. 4
Per dozen	$6.00	4.80	4.00	3.25	2.75

They refer to these reduced prices as resulting from the success which has attended the manufacture of the goods, and allude to an increase in capacity at their factories on Store Pails, Liquid Measures and other goods, which will they expect enable them soon to ship orders promptly.

Glass.—There is no change in prices of Glass, and no perceptible improvement in the demand. There appears to be no one buying Glass for stock, or anticipating their wants, but simply purchasing for their immediate requirements. Although the present outlook for the Glass business is not encouraging, improvements are being made at factories, and new factories are being built, which would show that those interested in these enterprises have hopes of improvement in the future. Steps will doubtless be taken by the manufacturers toward higher prices as soon as the demand justifies an advance, and we see no reason why prices placed upon a paying basis should not be sustained if the manufacturers work in harmony to this end. Jobbers show no desire to place orders for Glass even at the low prices reached last spring, but are waiting for further decline. It is reported that some Pittsburgh factories are offering Glass in desirable assortments at 85 per cent. discount, and that New Jersey factories are running even lower prices as an inducement for orders. Prices as quoted remain unchanged upon the following basis: American Window Glass, in carloads, 80 and 10 and 5 per cent. discount; less than car lots, 80 and 5 per cent. discount; French Window Glass, 75 and 10 per cent. discount; American Plate is held at a discount of 50, 10 and 5 per cent., and Imported Plate at a discount of 60 per cent.

Trade Items.

IN ORDER TO CORRECT a rumor which has to a certain extent become current and to meet certain representations in regard to the business of Sheep and Garden Shears carried on by Wm. Wilkinson & Sons of Grimesthorpe near Sheffield, England, Wiebusch & Hilger, Limited, 84 and 86 Chambers St., New York, as their sole agents, announce that this business is being conducted in the same way as it has been for years, and that there has been no change for a number of years in the management or in the staff of efficient employees and that no intention exists of removing the works from Grimesthorpe, where they have been so long established. They also suggest that all parties interested in obtaining the Genuine Wilkinson's goods carefully observe the trademarks by which the goods are recognizable.

THE MCINTOSH, HUNTINGTON COMPANY, Cleveland, Ohio, have added a Bicycle department to their business, which they intend to make complete in all the details. They have secured control of territory for the Wheels made by the Moffat Cycle Company and the Centaur Cycle Company, and will also have a line of Wheels ranging ranging from $60 to $100, list. The Wheel to which they are giving the most attention, however, is the Sunol, which is made especially for them and which they can offer to dealers in any part of the United States. They will also carry a full line of Bicycle sundries, such as Lanterns, Saddles, Oilers, Padlocks, and a thousand and one other things that are necessary in this line. On the Moffat Cycle they control Northern Ohio, Northern Indiana and Western Pennsylvania. The Moffat Wheel has an inflated cushion tire, which is referred to as possissing all the characteristics of the pneumatic, without the disadvantages usually accompanying the latter. The line of Wheels made by the Centaur Cycle Company includes the B. S. Diamond, Centaur, in both cushion and pneumatic tires, and the King of Scorchers, which is made in all grades from a light racing Wheel to a full roadster. For these Wheels they control the States of Ohio, Michigan and West Virginia and the Eastern portion of Kentucky and Tennessee. In manufacturing the Sunol, they have endeavored to build a Wheel that will meet the requirements of parties who buy a Wheel for use, and have therefore endeavered to get it only as light as is consistent with the strength necessary to stand rough usage to which a Wheel is frequently subjected. This Wheel will be furnished in both cushion and pneumatic tires. As will be seen, they have made arrangements to supply various grades of Wheels, and it is their design to make this department a feature of their business.

HERBERT L. MILLS, formerly with the Orr & Lockett Hardware Company, Chicago, Ill., has purchased the C. D. Lewis Hardware store in the Stanley Building, New Britain, Conn., and will soon open up a fine stock of Hardware. He is now selling off the balance of the goods of the Lewis estate.

STEPHENS & Co., for whom V. P. Humason is agent, 80 Chambers street, New York, advise us that it is on account of the scarcity of water, by which power their works are run, that they have been compelled to disappoint their customers in filling orders for Rules. They state that they are almost always obliged to shut down for a short time each summer, but this year the drought has been so unusual that they have been unable to run their machinery more than a few days at a time for some months. As soon as the water famine is over they will begin to turn out goods as usual, and hope that within a few weeks they will be able to fill back orders and supply future demands. Many of their customers not clearly understanding these facts are, it is intimated, under the impression that their orders have been neglected, which, as explained above, is not the case.

ANNOUNCEMENT is made of the death of Ezra White, senior partner of the Hardware firm of Norris & Co., Crete, Neb., on October 24, at the age of 72. Mr. White was born in Delaware, N. Y., and removed to Waverly, Iowa, in 1864, where he engaged in business till 1878, when he located in Crete, Neb., becoming a member of the firm of Norris & Co. The business will be continued under the same name.

A SUIT HAS BEEN brought by the Columbia Patent Company, owner of the patents on Barb Wire, against the Kilmer Mfg. Company of Newburg, N. Y., for alleged infringement of patents. The damages are laid at $100,000. John R. Bennett of New York is the counsel for the plaintiffs. This suit is indicative of the intention of the company to proceed legally against parties whom they regard as infringing the patents which they own.

HENRY C. MERRILL, who for several years has been in charge of the New York office of the Mallory-Wheeler Company, New Haven, Conn., has resigned his position, and the company have made a new departure in connection with the marketing of their goods. By this arrangement the sale of their goods will be in charge of their New York office, 64 Reade street, under the direction of the manager, George J. Sudlow. The factory will thus be free to give their undivided attention to the manufacture of the goods, and to the putting on the market of new patterns, &c. Mr. Sudlow, who has charge of the sales department, as above mentioned, is widely known to the trade and thoroughly familiar with the Lock business, having been for more than 20 years connected with the Russell & Erwin Mfg. Company, for part of the time as their representative in the West. In connection with the new policy of the company it is intended to push the business vigorously, and we are advised that in addition to the new designs and patterns which have recently been put on the market others are in preparation, and will be offered before long.

Hardware in South Africa.

WE TAKE PLEASURE in laying before our readers the following graphic and interesting description of the condition of things in South Africa, especially as relates to the sale of American Hardware in that market. It is in the form of a letter from Polhemus Lyon, our foreign representative, and bears date Port Elizabeth, South Africa, October 19, 1891:

This city is the great depot for the interior of South Africa. It is 160 miles nearer all the interior centers than Cape Town, so that with half the population it does twice the trade of that city. Among the general merchants here are four or five whose business exceeds $1,000,000 annually, and who do the interior trade in Hardware. The four houses here who confine themselves to the ironmongery trade do not attempt to work a large field.

At least 1000 tons of American products come to this port every month, but this is largely made up of petroleum and timber, the balance being furniture, canned meats, Axes, Shovels, Tools and small Shelf Hardware. English manufacturers are very much more complaisant than they used to be, and are now offering American pattern Shovels with American handles; in this they succeed rather better than with Axes, which they also offer in American patterns with imported handles.

South Africa does not give American lines the preference that our goods obtain in Australia, where a much larger variety finds market; still, the buyer there freely speaks of how much more satisfactory it is to trade with the United States, where goods are put up more conveniently and a desire to please the customer so much more evidenced. All these things help us to wedge in a few more lines every year, even though there is considerable feeling, such as the following incidents illustrate:

A gentleman finding his son making up his first American indent was much troubled, exclaiming, "What! Great Britain sold out? Isn't it possible to get these goods in England?" And another declined at first to entertain quotations from me, saying that his trade followed his flag, and he would rather buy in England at an advance than go to a foreign land. I think, however, I shall get his

order before leaving, as I did that of the first house.

I find that English Barbed Wire has rather pushed the American out, not on account of price, which is about the same ($72 per ton of 2240 pounds for galvanized), but because our make is, it is claimed, not so tightly twisted as the English and the points are too loose.

At all the colonial ports so far away from the home market the merchants do quite a large business among themselves, "pick up buying" we call it, and this is done through a broker who keeps himself well informed as to the local stocks, the seller not knowing to whom the goods are going until after the order is placed. Another custom here is to charge all city goods bought after the 24th as 1st of the following month. Because of the value of this pick-up trade merchants prefer to carry indentical stocks. This makes it so much the harder to introduce new lines and explains why so many merchants of a city will buy through the same American commission house, the three larger of our New York export houses doing nearly all the American exporting to this country.

The stock of a new line of steamers between England and the Cape is being successfully floated; 16 steamers already comprise the line. Their prospectus states that the company propose to send at certain frequent intervals a steamer home via American ports. It is to be hoped that this will be carried out, and thus a larger number of colonial merchants will be tempted to visit our shores.

One cannot but be very much encouraged with the prospective growth of these colonies. Competition between the ports of Cape Colony and Natal is stimulating railroad building into the interior, so that that rich country, almost inaccessible half the year, will in 15 months be brought within three or four days of the coast. The merchants at these ports believe that the development already showing gives every promise of a much larger business for next year to atone for the depression of the past 18 months. There has been a weeding out and getting down to hard pan which is not without its advantages. Booms and set backs seem to be as current in other parts of the world as in America.

Verily there is a deal of sameness after all. POLHEMUS LYON.

Important Contract for Aluminum Hardware.

THE Orr & Lockett Hardware Company of Chicago have secured the contract for furnishing with Aluminum Hardware the main floor of the Monadnock and Kearsarge buildings in that city. These buildings are so constructed that they appear to be but one building, yet they are wholly separate from each other. They are 16 stories high. The entire Hardware contract was placed with the Orr & Lockett Hardware Company, who will furnish Bower-Barffed goods for all but the main floor. The designs, however, will be the same in either metal. Illustrations of the designs, taken from photographs, are given in Figs. 1, 2, 3 and 4. Referring to the adaptability of aluminum for Hardware purposes and the conditions under which it can best be used, Orr & Lockett Hardware Company advise us as follows:

Having made some extensive experiments as to the properties of aluminum, we find that it has not the strength attributed to it by news

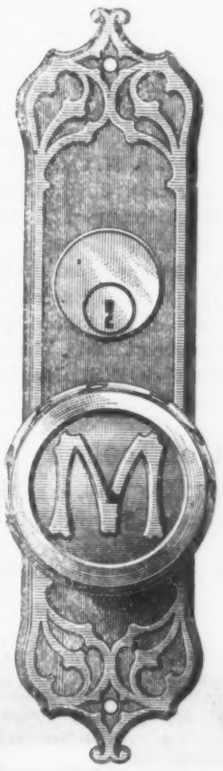


Fig. 1.—Knob and Escutcheon.

Fig. 2.—Store Door Handle.

paper writers and those who have no inner knowledge of the subject. When used as an alloy with bronze, aluminum adds materially to the strength of the former, especially when the quantity of aluminum used does not exceed 10 per cent. This mixture, however, is not what is wanted by architects, and is only mentioned as a matter of information. By actual test with approximately pure aluminum, say from 93 to 97 per cent., using a heavy 4 x 4 inch hinge, fitted with self-lubricating washers, the wearing qualities do not exceed one-quarter that of bronze metal. Without a device similar to the self-lubricating washer an aluminum hinge would be simply useless, as it would not last upon a door in constant use more than a few hours without crushing. The addition of 3 or 4 per cent. of tin slightly increases the strength of the hinge for such purposes, but of course increases its tendency to tarnish. It is a mistake to suppose that the commercial aluminum will not tarnish. The surface when exposed to the atmosphere becomes covered with a bluish oxide, which may not present a disagreeable appearance, but is none the less a tarnish, as the term is understood. It can, however, be removed.

The connection of the Orr & Lockett Hardware Company with this class of work is worthy of more than passing notice. A remarkable change has been effected in Builders' Hardware through the erection of modern office buildings, in which Chicago has made such distinctive progress. Not many years since there was nothing in the market but cast iron Black Hinges, white Porcelain Knobs, Japanned Escutcheons, &c. The finer classes of residences were favored with some modifications of these plain trimmings, but still they were to a very great extent conventional. The complications of modern office building, however, reached a point where it was impossible for any one who really desired to obtain best results to place the Hardware under contract as he would the building stone or plastering. The introduction of ornate interior features and the rapidity with which conveniences have been improved and embellished have created the necessity for a Hardware expert as much as a plumbing expert. Everything must be just right for the place. No two buildings are alike. So much of the architect's individuality is woven into these grand structures that it becomes a very hard matter to bring the Hardware into perfect harmony with everything else, and at the same time secure the best results in strength, finish or efficiency. Buildings can be finished with Hardware under contract, of course, but the chances are against having everything just right. The prominence which this firm has acquired in the line of supervising the finishing of large office buildings is well shown by the following partial list of structures for which they have furnished the Hardware complete: First National Bank Building, the Montauk, Grand Trunk depot and offices, the Pullman Building, Home Insurance Building, Phenix Building, Union League Club, New Board of Trade, the Tacoma, the C., B. & Q. office building, the Rookery, the Auditorium, the Manhattan, the Hotel Metropole, and the Monadnock and Kearsarge buildings, all of Chicago; the Kenyon office building of Louisville, Ky.; the Omaha

Fig. 3.—Letter Plate.

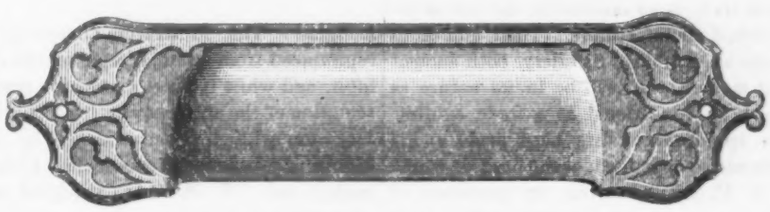


Fig. 4.—Letter Plate Hood.

Bee Building of Omaha, Neb., and the Midland Hotel of Kansas City.

It will be seen that the position occupied in the Builders' Hardware trade by this firm is peculiar. Credit for the fine work now so plentiful is generally given to the manufacturers by the public. The Orr & Lockett Hardware Company have no factory of their own, but place their orders with establishments skilled in the manufacture of Hardware. Direct personal attention is given to the completion of each order by Mr. Lockett, through whose hands every piece passes for thorough inspection before it is sent to the building for which it is destined. The first samples may be altered in so many respects before they are finally approved that the completed article would hardly be recognized as the one first turned out. This is not a criticism of the manufacturers, as they are obliged to work from architects' sketches and written descriptions, which, of course, never can be made sufficiently comprehensive to enable a workman to reproduce the exact pattern or finish that may be desired. Here is where the expert comes in, who elaborates or modifies or embellishes the first product of the factory and finally secures just what is desired.

This contract is believed to be the first of any importance ever placed for Aluminum Hardware. This firm were also first in the world to use Bower-Barffed Hardware, which was adopted by the owners of the Rookery on their recommendation and has since been copied in other public structures.

Wholesale Saddlery Association.

THE Wholesale Saddlery Association of America closed its third annual convention with a banquet at the Tremont House, Chicago, on the evening of the 18th inst., where its members had been in session for two days. The association is composed of Harness manufacturers from all parts of the United States. It was formed three years ago at St. Louis, Mo., and its object is to combine the Wholesale Saddlery trade of America for the purpose of fostering mutual interests and regulating certain trade practices in so far as they have no relation to prices or combinations. One of its principal aims is to effect a modification in the freight classification of Saddlery. The association has 90 members.

Eighty regular members and over 100 accessory members have been in attendance at the recent meeting, over which A. F. Risser of Chicago presided. Their main business has been to prepare for a World's Fair display of the products of their trade as an association and not as individual manufacturers. Their aim is to make an exhibit of Saddlery, both ancient and modern, that will be in its nature as much an educational as a trade exhibit. An appropriation has been made and a committee appointed, at the head of which is A. F. Risser, to buy up specimens of quaint and peculiar Harness, with a view of tracing the evolution of Saddlery from the earliest inventions down to the present time. The first afternoon of the convention was occupied with an address by Willard S. Smith, Chief of the Department of Transportation of the World's Fair. He explained to the assembly the provisions that had been made by the World's Fair for Harnessmakers as a part of the general plan for exhibiting the various means of transportation in use by the various peoples of the earth. A large amount of business of a technical character has been transacted, the most important of which was the establishment of a trade credit bureau situated at St. Louis. It was decided to hold the next convention at Baltimore, Md., and the following officers were elected for the ensuing year: President, Owen Gathright, Jr., Louisville, Ky.; first vice-president, B. W. Campbell, Cincinnati, Ohio; secretary, J. B. Denvier, St. Louis, Mo.; treasurer, J. B. Kreher, St. Louis, Mo.

A vice-president was appointed from every State in the Union. The Executive Committee will consist of the following: B. W. Campbell, Cincinnati, Ohio, chairman; Charles F. Steinacker, St. Joseph, Mo., and J. J. Kreher, St. Louis, Mo.

Exhibit of Tools.

AMONG THE ATTRACTIVE exhibits at the Binghamton Industrial Exposition, held at Binghamton, N. Y., October 6–10, was that of Callahan & Douglas. The illustration herewith is reproduced from a photograph of the exhibit, and while it gives a truthful representation of the arrangement, it necessarily lacks the brilliant effect produced by the highly polished steel Tools against a black background. F. H. Owen designed and arranged the board, the frame work of which was 12 x 14 feet, covered with black calico. The Maltese cross of Cross-Cut Saws was first put in place, this being the principal figure in the design; and the measurement and arrangement of the other figures were made to conform to this. The design presented a very attractive appearance, and received general praise and favorable comment from the thousands who visited the exposition.

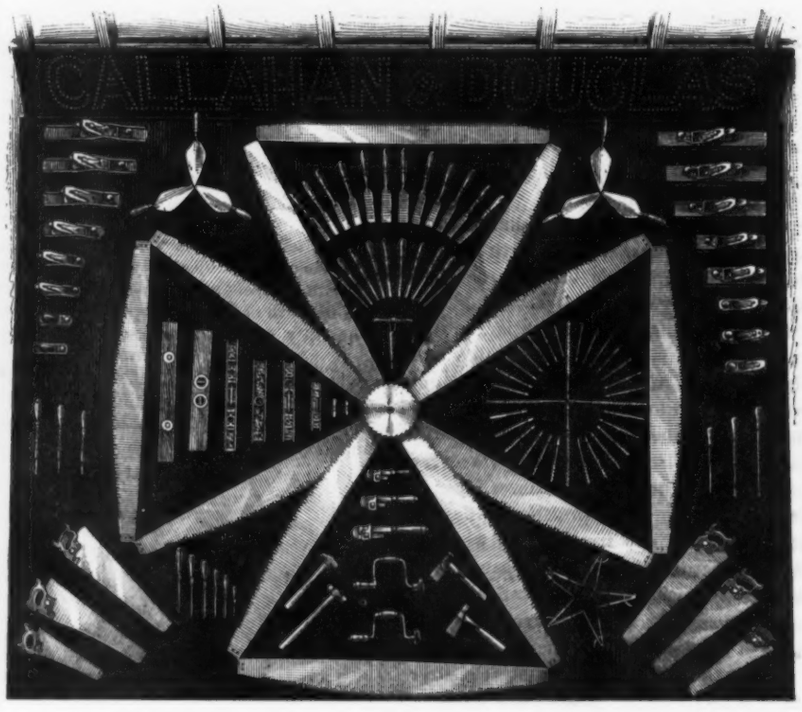


Exhibit at the Binghamton Industrial Exposition.

Bicycles.

GREAT ACTIVITY is noticable among Bicycle manufacturers in making preparations for the trade of 1892. Companies are being reorganized and put on better financial and working basis. Additions are being made to factories to increase their facilities, while in many cases new features will be brought out for the coming season. The indications are that the demand for wheels during the coming year will be greater than ever, and that they will be handled more generally by retail Hardwaremen than they were during the year past. Wholesale houses are obtaining control of territory for certain lines of machines, and also having machines especially manufactured for them under their own name, the sale of which they control throughout the United States.

Farwell, Ozmun, Kirk & Co.

A DESTRUCTIVE fire visited St. Paul, Minn., on the night of November 17, in which the wholesale Hardware firm of Farwell, Ozmun, Kirk & Co. were heavy losers. The building, which is now a complete ruin, was a brick and stone structure, five stories high, and was occupied by a wholesale grocery house and the above firm. The Hardware stock in this building, though entirely destroyed, was, we are advised, very fairly insured. The firm have temporary headquarters in another building, having resumed business promptly, and with characteristic energy, are now filling orders for goods. It is reported that their loss was made greater by the destruction of their books and papers. The entire loss by the fire is estimated to be about $1,000,000.

Remittance Blanks.

THE SUBJECT of the convenient and comprehensive arrangement of remittance forms is apparently still exciting the interest of the trade, and our readers continue to send us specimens of blanks which are employed by them in their business, and which they regard as meeting the purpose for which they are intended exceptionally well. One of these comes from E. I. King & Co., Logan, Kan., and is herewith represented filled up, Fig. 1, the heading being, of course, omitted, and the whole blank given reduced in size.

SIR:

You will please credit our account as follows:

Enclosed Draft,		120 76	
Discount,	*on Invoice Oct. 10*	2 05	
"	" " "	20	
Overcharges on Cutlery		3 25	
Freight allowance		2 51	
In payment for Invoice of	*Oct. 10th for*		102 40
	" " "		26 37
		128 77	128 77

You have overcharged us on blank goods. Please note your quotations of Sept. 28th. The freight expense was the above amount over guaranteed rate.

Yours Truly,

E. I. King & Co.

Fig. 1.—Remittance Blank of E. I. King & Co.

Another style of remittance blank, Fig. 2, is that used by J. W. Hobbs, New Wilmington, Pa., which is also represented herewith.

The utility and convenience of the blank employed by Carter-Magill Hardware Company, Chattanooga, Tenn., Fig. 3, is emphasized by them, and we reproduce it reduced in size that our readers may gain an idea as to its arrangement.

Net Prices on Hardware.

NOTHING WHATEVER seems sacred from attack these days. A spirit of restlessness is abroad, and the demand for change from the existing order manifests itself in the most unexpected quarters. From time immemorial the custom of making a list of prices after an arbitrary method and then selling by discount from this list has obtained among Hardware manufacturers and has been accepted by Hardware jobbers and merchants generally with apparently no objection from anybody regularly connected with the trade. A freshly inducted candidate into the mysteries of Hardware bookkeeping might be driven almost to distraction in endeavoring to determine how he should sell Curry Combs costing 50 and 10 and 10 per cent. discount with 2 per cent. off for cash so as to obtain 25 per cent. profit without resorting to the unprofessional practice of establishing a net price, but that is one of the peculiarities of the Hardware business, universally recognized and accepted, and the system has had to be mastered. This work has been rendered comparatively easy of recent years, however, by the publication of comprehensive tables of discounts, showing nearly all possible combinations, with their equivalents in simple terms. A discount literature has thus sprung up as an accompaniment of the trade and in fact an almost indispensable adjunct of it in its present form. And now the whole fabric of discounts is being attacked in the house of its friends and a movement against it is seriously threatened.

The agitation for net prices is principally due to the desire by jobbers to secure better profits on goods which are not frequently called for. They claim that according to present practice a uniform discount is made applicable to a whole line of goods, articles in constant demand being indiscriminately classed with other articles only occasionally called for. All must be kept in stock. The latter represent constantly accumulating interest, and to a great extent dead stock, while the former are lively in movement, and the money invested in them is being continually turned over. Yet according to the discount system the jobber receives the same proportionate price on the former as on the latter, and his profit on the slow-selling goods is necessarily very light. The establishment of a net price would, it is claimed, enable a jobber to fix an arbitrary yet reasonable rate on goods of slow sale which would afford him a proper profit. It is hardly necessary to name instances of this kind as an example, because every Hardware merchant can easily recall cases to which these remarks apply.

So strongly does this idea of net prices appeal to the business sense of jobbers that some of them are seriously considering the advisability of taking independent action. In issuing catalogues of seasonable goods it has heretofore been their custom to insert list prices of the various articles enumerated, furnishing discounts afterward upon the special application for them. These catalogues or monthly cir-

Gentlemen:

Enclosed find my check for.....
which with a discount of.....per cent....
Freight allowed.....
Over-charging .....
.....

Covering invoice of

Total. - - - -				

Please place same to my credit.

Yours Truly,

Fig. 2.—Remittance Blank of J. W. Dobbs.

culars may thus advertise in attractive forms the goods which the jobbers who issue them have for sale, but they do not convey to the retail merchants receiving them the exact information as to prices which would lead to immediate orders. It would be a comparatively simple matter to name net prices, and one might suppose that under the circumstances to think would be to act. But the Hardware trade has for so many years been hedged about with the discount system that jobbers hesitate to make the innovation without very seriously deliberating over its possible consequences. They recognize the fact that their customers would have to be educated as to the exact meaning of the terms "net prices," and it would take some little effort to convince them that on such prices no discount was to be allowed. Once put in force, however, the point is made, there would be no difficulty in keeping up the new plan of quoting prices. The fact is recognized that discounts could not be entirely abolished, as large buyers would have to be favored with a better rate than the general trade.

M .....

We enclose herewith our No. .....

on ..... *for* .....

Dollars,

in payment of account as per statement below.

Please acknowledge receipt and oblige

Yours truly,

Carter-Magill Hardware Co.

$ ..... *By* .....

DEBITS.				CREDITS.			
		TO CHECK.				BY INVOICE.	

Fig. 3.—Remittance Blank of Carter-Magill Hardware Company.

The establishment of net prices as a general custom throughout the trade depends almost entirely upon the manufacturers. The jobbers may decide that their interests would be best served by the abolition of discounts and the establishment of actual prices in their stead, but unless the manufacturers can be brought to see some advantage in the change it will be brought about very slowly, if indeed any headway whatever is made in that direction. Manufacturers of specialties could adopt net prices without any difficulty, but those making standard goods, such as Screws, for instance, would perhaps find great difficulties in their way. There would certainly be more room for cutting and making special prices on part of their line than under present conditions. It would be much more difficult to trace violations of agreements and combinations. This would not be an objection on the part of merchants, it is true, but it would have much weight with manufacturers. Another objection is foreseen in the necessity entailed of frequent publications of price-lists, which would be burdensome and expensive in times of fluctuating values. Discounts can be readily changed at present, with a permanent price-list, and the entire trade notified in a very short time at comparatively light expense, but the publication of an entirely new net price-list would be a serious and expensive matter in lines covering a great variety of sizes and styles. The desired change may be very desirable in some respects, but it hardly seems to be practicable, especially in view of the fact that the trade at large would probably view it with disfavor, as its object would be to get better prices out of them, while its immediate result would be a great increase in the work of keeping track of the market and buying goods.

Price-Lists, Circulars, &c.

FIELD-LANGE WIRE AND METAL COMPANY, St. Louis, Mo.: Catalogues Nos. 1 and 2. The former is devoted to Iron Fences, Fencing, Cast-Iron Posts, &c. These goods are illustrated in a variety of styles and forms. Catalogue No. 2 illustrates Wire Frames, Guards, Railings, Partition Screens, Brass Counter Railing, Tinned Wire Waste-Paper Baskets, &c. A separate sheet shows a line of Wire Flower-Pot Stands. These are accompanied by a price-list of Wire Cloth, &c.

FOSTER, STEVENS & CO., Grand Rapids, Mich.: Guns, Rifles, Revolvers, Ammunition, Sportsmen's Goods and Fishing Tackle. This is a handsomely printed catalogue of 37 pages, with cuts showing off to good advantage. It is fully illustrated, showing a full line of Sporting Goods suitable for the season, and is designed for dealers only. The above firm are endeavoring to make their Sporting Goods Department second to none, and their catalogue makes a fine showing for a firm who have so lately begun making Sporting Goods a feature of their business.

ROSSENDALE BELTING COMPANY, Newark, N. J.: Anti-Frictioned Edge Hair Belting. The Belt is made of camel's hair, and is referred to as stronger, more durable, cheaper, more effective, and as stretching less than leather. It is claimed, among other advantages, that these Belts come straight off the drum, and do not follow and adhere to it as in the case of leather belts; that there is no loss of power; that a greater production is obtained from the machinery, and that these Belts require only one piecing, and are uniform in weight and thickness.

GIBSON AGRICULTURAL WORKS, Harriman, Tenn.: Illustrated catalogue and price-list, bearing date November 1, 1891 of Steel, Cast and Carbon Plows, Cultivators, &c. Cast Turning Shovels, Bob White Ratchet Stock, O. K. Universal Stock, Georgia Major Plow, Bob White Plow, Carbon Plow, Dixie Girl Plow, Iron King and Eureka Cultivators and Side Harrows. New Coon, Boss and Georgia Double Stocks, &c., are thus shown.

THE BALDWIN REFRIGERATOR COMPANY, Burlington, Vt.: The Baldwin Refrigerator. Their 1892 catalogue illustrates and describes these goods and shows some new styles of hardwood antique Refrigerators. These are known as the Burlington and Premier. The former was introduced by them last year, the demand being so large that they have decided to extend the line and to add the Premier style. The Standard is a specialty for which they anticipate a ready sale. A line of grocers' styles are shown, in connection with which are patent devices by which butter, &c., can be cut or handled outside the Refrigerator, without warm air gaining access meantime. Peculiar advantages are claimed for their plan of circulation, which is incorporated in all their goods.

J. E. WAKEFIELD, Worcester, Mass.: Wakefield Pipe Wrench and special attachments for handling finished work. The attachments consist of toothed and plain plates and clamp for use in connection with the Wrench; also a Vise Clamp to use in a Vise. By the use of these attachments finished work can be handled without injury to the finish.

J. H. HOAGUE, Chicopee, Mass.: Improved Mechanics' Tools and Hardware Specialties. Automatic Drill, Automatic Spring Drill, Chamferer Gauge, Dividers and Distance Marking Tools, Rule Trammel Points, Bit Brace Chucks, Hand Vises, Solid Steel Chucks, Bench Stop, Tracing Wheels, Sewing Machine Screw Drivers, Marking Awls, Can Openers, &c.

THE HOLT MFG. COMPANY, Hartford, Conn.: Hardware and Tools. Braces, Bit Extensions, Drill Bits, Hack Saw Frames, Nail Sets, Steel Screw Hand Clamp, Improved Routing Plane, Diamond Tools, Saw Pad Handles, Marking Awls, Coat and Hat Hook, and Recapper. It is an interesting price-list, well arranged, and contains some new goods.

Trade in Louisville.

FROM an occasional correspondent we have the following communication in regard to the condition of business in Louisville, Ky., with a special reference to such staple goods as Nails, Barb Wire, &c.:

The Hardware trade of Louisville, Ky., is very good as to volume, but prices are so extremely low there is very little advantage in handling an ordinary bill of goods, especially when the accounts of so many country customers have to be closely scrutinized. There is no doubting the fact, the excellent promises and hopes to come from the big crops are yet far in the future. Collections are not as good as they should be, and too many accounts are carried along.

A reasonable trade is being done in Bar Iron and other heavy goods. The rolling mills are making efforts to get more money for their product, but the jobbers are as usual well secured on orders and know where to get more when present stock runs out. Wagon and Carriage Hardware generally is in good demand. Cut and Wire Nails have been more demoralized this whole year than ever before. A steady progress downward has marked their course, and it is hazardous to surmise even where and when they will stop. There is very little speculative buying of either kind, as up to the present time almost invariably a lower price is offered a dealer before his previous order is more than received.

This process may, perhaps, be good for the jobbers eventually, who are the natural distributors, preventing the speculative spirit usually displayed at this time of the year, but the manufacturers must miss the big wholesale orders. Certainly wire nails are growing in demand, and the discussed question of the survival of the fittest will be settled by the future. For the present there is ample room for a moderate output of both. Barbed Wire goes very slowly from stock, although an open fall should have aided heavy work in fencing—probably another result of the slow returns of a bounteous crop. The Columbia Patent Company have not helped prices much as yet (except downward) and the jobbers do not favor any strictures on their purchases which the Patent Company will impose. At this writing a cold snap has at last arrived, which looks as if real winter is coming, when seasonable goods will be in demand. Notwithstanding extremely low prices "the world do move," and we hope for better times.

It is Reported—

That fire at Slater, Mo., destroyed the Hardware store of L. A. Buck. Loss, $5000; insurance, $3000. Jenkins Bros. store was also destroyed, the loss being $3000 and insurance $2000.

That Rusk & Houston, Kirkwood, Ill., have purchased the Reynolds' stock of Hardware.

That Gabriel Moyer, dealer in Implements, &c., Mount Joy, Pa., is enlarging his present warerooms for the accommodation of his increasing trade.

That Harvey Miller, the Hardwareman, of Grand Rapids, Mich., has disposed of his business and has removed to Belding, Mich., where he has taken charge of a hotel.

That Sharp & Bro., dealers in Hardware, Stockham, Neb., will remove their stock to Aurora in that State.

That R. F. James' Hardware store at Lexington, Neb., was destroyed by fire on the 14th inst.

That the Hardware store of Henry Burr & Bro., Griffin, Ga., was robbed on the 11th inst., and $150 worth of Pistols stolen. This is the seventh time in two years that this store has been burglarized, and the second time in six weeks.

That the store of Kline & Dean, Hardware dealers, Addison, Mich, was destroyed by fire on the 11th inst.

That Jones & Putnam's Hardware store at Constantine, Mich., was entered by burglars on the 17th inst. and $400 worth of Cutlery and Silverware stolen. The cracksmen, who are supposed to be boys, got safely away with their booty.

That Hagle Brothers, Hardware dealers, Mount Sterling, Ill., have taken possession of their building, which has been in course of erection for some months.

That Masson & Friesdell, dealers in Hardware, Hammondsport, N. Y., are intending to enlarge their establishment for the accommodation of their increasing trade.

That Charles O. Arnold has purchased the Hardware business of his father, Amasa S. Arnold, on South Main street, Woonsocket, R. I.

Exports.

PER BARK ALICE, OCTOBER 30, 1891, FOR AUCKLAND.

By Alfred Field & Co.—1 case Hardware.
By Hartley & Graham.—20 cases Cartridges, 1 case Empty Cartridge Shells, 1 case Fire Arms, &c.
By E. B. Wheeler Company.—1 case Hardware.
By McLean Bros. & Rigg.—1 barrel Carriage Hardware, 2 packages Cow Bells, 4 cases Bolts and Nuts, 1 case Axle Pulleys, 2 cases Saws, 1 case Percussion Caps, 3 cases Oil Stone, 5 cases Axes.
By W. H. Crossman & Bro.—4 packages Lamp Goods, 4 cases Wringers.
By H. W. Peabody & Co.—21 packages Lampware, 18 racks Churns, 3 packages and 8 cases Hardware, 12 cases Traps, 1 case Plows, 1 case Hardware, 7 packages Hardware.

PER SHIP ATLANTA, OCTOBER 30, 1891, FOR MELBOURNE, AUSTRALIA.

By Russell & Erwin Mfg. Company.—15 cases Hardware.
By Atlas Tack Company.—4 cases Nails.
By Hartley & Graham.—5 cases Empty Cartridge Shells, 27 cases Cartridges, 1 case Fire Arms, &c.
By Healy & Earl.—4 boxes Scales
By the E. B. Wheeler Company.—30 packages Hardware.
By W. H. Crossman & Bro.—4 crates Traps, 1 case Lead Pencils, 1 case Traps, 2 cases Drawing Knives, 3 cases Grindstones, 1 barrel Braces, 3 packages Lamp Goods, 55 packages and 27 cases Hardware, 1 case Iron Locks, 1 case Pump Parts, 1 case Wrenches, 14 cases Hardware, 1 case Traps, 3 cases Oil Stone, 1 case Hardware, 1 case Rakes, 20 cases Hardware, 72 cases Loaded Shells, 5 cases Paper Shells, 1 case Hardware.
By A. Field & Co.—2 cases Bolts, 3 cases Nails, 2 cases Tacks, 2 cases Hardware.
By R. W. Forbes & Son.—30 cases Lampware, 3 cases Carpet Sweepers, 6 cases Agricultural Machinery, 2 cases Lawn Mowers, 1 case Shot Cartridges, 5 crates Stoves, 5 packages Hardware, 3 cases Tools, 200 reels Barb Wire, 21 boxes Lawn Mowers, 15 packages Tools, 20 packages Hardware.
By R. W. Cameron & Co.—1 box Saws.
By E. T. Hopkins.—3 cases Handled Axes.
By A. S. Lascelles & Co.—6 cases Plated Ware.
By W. K. Freeman.—6 dozen Iron Rakes, 28 dozen Forks, 10 boxes Hardware, 25 packages Lampware, 76 cases Ammunition.
By Arnold, Cheney & Co.—10 barrels Wire, 3 boxes Machinists' Tools, 1 box Washing Machines.
By R. H. Dana & Co.—6 crates Rat Traps, 6 cases Axes, 137 cases Hardware, 3 cases Tacks, 4 cases Forks, 30 cases Wringers, 1 case Saws, 1 case Drills, 2 cases Hardware, 1 case Saw Sets, 2 cases Wrenches, 7 cases Hardware, 1 case Hammers, 7 cases Hardware, 1 case Bit Braces, 1 case Rat Traps, 3 cases Hardware, 2 cases Wrenches, 12 cases Axes, 5 cases Cartridges, 2 cases Empty Shells, 2 cases Oil Stoves.
By Strong & Trowbridge.—1 case Faucets, 1 case Hammers, 1 case Nails, 3 cases Hardware, 2 casks Pumps, 5 cases Shells, 1 case Cartridges, 2 cases Hardware, 2 cases Bolts, 2 cases Nails, 1 case Lampware, 1 case Locks, 1 case Traps, 1 case Axes, 6 cases Hardware, 9 cases Meat Choppers, 3 packages Hardware, 5 cases Guns, 1 case Shells, 7 cases Cartridges, 1 case Hardware, 44 Stoves, 3 dozen Hardware, 8 cases Hardware, 1 case Bolts, 1 case Hardware.
By H. W. Peabody & Co.—107 cases Edge Tools, 22 packages Lampware, 13 packages Hardware, 1 case Farming Implements, 1 case Stoves, 12 packages Hardware, 2 dozen Hoes, 14 cases Edge Tools, 1 box Revolvers, 6 boxes Edge Tools, 1 case Scales, 2 cases Edge Tools, 1 package Tools, 2 cases Hardware, 2 cases Plated Ware, 1 case Hoes, 3 packages Emery Wheels, 7 cases Edge Tools, 12 cases Wringers, 4 cases Hardware, 10 cases Hardware, 10 cases Edge Tools, 1 package Hardware, 1 case Cutlery, 21 cases Edge Tools.

PER BARK PARSEE, OCTOBER 31, 1891, FOR EAST LONDON, SOUTH AFRICA.

By Arkell & Douglas.—1 barrel Plated Ware, 2 Lawn Mowers, 1 bale Cotton Lines, 11 cases Sash Weights, 1 case Hardware, 16 racks Churns, 11 cases Washers, &c., 167 cases Plows and Parts, 56 cases Scales, 56 cases Hardware.
By Coombs, Crosby & Eddy.—256 Plows and Parts, 10 Scales, 7 cases Sash Cord and Weights, 12 dozen Steel Spades and Shovels, 3 dozen Saws, 8 packages Saws, 1 case Tools, 1 case Hardware, 1 case Steel Springs, 1 case Hardware, 1 case Steel Axes, 1 rack Ladders, 17 cases Iron Parts for Plows.

ADDITIONAL SHIPMENTS PER BARK ALICE, OCTOBER 31, 1891, FOR WELLINGTON, NEW ZEALAND.

By W. R. Grace & Co.—50 cases Edge Tools.
By Alfred Field & Co.—1 case Hardware, 20 Stoves, 1 case Drills.
By H. W. Peabody & Co.—39 packages and 4 cases Hardware, 20 packages Hardware, 9 cases Wringers, 2 cases Plows, 1 box Lampware, 1 case Nails, 4 cases Hardware, 58 cases Tools, 12 cases Bush Hooks, 32 cases Tools, 1 package Wireware, 4 cases Hardware, 6 packages Stoves, 1 package Egg Beaters, 2 barrels Lampware.
By R. W. Forbes & Son.—10 boxes Axes, 30 kegs Nails, 3 barrels Lampware, 7 cases Horse Nails, 5 cases Tools, 2 cases Wringers, 2 packages Hardware, 3 cases Horse Nails, 5 cases Horse Nails, 20 cases Stoves, 12 cases Builders' Hardware, 10 crates Churns, 10 boxes Axes, 1 case Lampware, 2 cases Stamped Ware, 11 packages Stoves, 14 cases Hardware, 21 packages Lampware, 20 packages Hardware, 11 cases Horse Nails, 24 boxes Axes, 20 packages Hardware, 56 boxes Axes, 3 cases Lampware, 22 cases Horse Nails, 60 bundles Hardware.

FOR AUCKLAND.

By R. W. Forbes & Son.—1 case Hardware, 3 boxes Lampware, 6 boxes Bolts, 28 packages Hardware.
By Arnold, Cheney & Co.—61 dozen Axe and Hammer Handles, 20 dozen Axes and Hatchets, 7 dozen Hammers, 1 case Wooden Faucets, 1 case Saws, 1 case Tools, 1 case Strops, 6 packages Hardware, 3 cases Axe and Hammer Handles.

PER BARK MONROVIA, NOVEMBER 2, 1891, FOR PORT ELIZABETH, SOUTH AFRICA.

By Coombs, Crosby & Eddy.—25 packages Agricultural Implements, 100 reels Barb Wire, 50 kegs Nails.
By Strong & Trowbridge.—2 dozen Plated Ware, 8 packages Fiber Ware, 6 dozen Pulleys.
By Winchester Repeating Arms Company.—24 dozen Guns.
By John Norton's Son.—1 case Agricultural Implements.
By Arkell & Douglas.—4 cases Sad Irons.
By H. W. Peabody & Co.—6 crates Corn Shellers, 3 packages Hardware, 2 packages Corn Shellers
By John Norton's Son—8 cases Choppers, 51 bundles Ladders, 2 cases Rifles, 7 cases Tools and Ammunition.
By W. H. Crossman & Bro.—71 cases Hardware, 75 crates Hardware, 85 packages Agricultural Implements, 2 casks Pumps, 60 cases Nails, 3 Stoves, 100 reels Barb Wire, 90 kegs Nails, 32 crates Stoves and Parts.

PER BARK JAMES H. HAMLEN, NOVEMBER 7, 1891, FOR PORT NATAL, SOUTH AFRICA.

By Collins & Co.—12 boxes Handled Axes.
By Corner Bros. & Co.—7 cases Tools, 25 cases Agricultural Implements, 35 cases Hardware.
By H. W. Peabody & Co.—1 case Wireware, 25 packages Plows, 1 case Traps, 1 case Hardware.
By Woodhouse & Stortz.—6 cases Edge Tools, 2 cases Lawn Mowers, 40 pounds Lead Pencils.
By Strong & Trowbridge.—50 coils Barb Wire.
By W. H. Crossman & Bro.—463 cases Agricultural Implements and 18 crates Parts, 28 cases Hardware, 130 kegs Nails, 26 cases Hardware, 51 cases Agricultural Implements, 112 reels Barb Wire, 45 coils Sisal Rope.

By Coombs, Crosby & Eddy.—6 Corn Shellers, 1 gross Planters' Hoes, 2 cases Iron Axles, 6 dozen Nail Hammers, 2 dozen Steel Saws, 3 cases Garden Tools, 6 cases Scales, 1 case Oil Stone, 2 cases Scythe Stone, 1 case Snaths, 10 packages Corn Shellers, 2 packages Scythes, 8 cases Axes, 1 case Hardware, 2 cases Wringers, 1 case Ice Cream Freezers, 48 bundles Wheelbarrows, 1 package Washing Machines, 1 case Saws, 2 cases Hunters' Hatchets, 1 case Hardware, 2 cases Choppers, 1 case Hardware, 2 cases Steel Saws, 1 case Wrenches, 1 case Casters, 6 Grindstones, 3 Corn Shellers, 6 Corn Shellers, 84 pieces Plow Parts, 1 case Hardware, 6 cases Corn Shellers, 3 packages Store Trucks, 6 cases Scales, 6 crates Washing Machines, 2 cases Plows, 6 Corn Shellers, 110 Meat Cutters, 13 Scales, 75 dozen Hardware, 2 Lawn Mowers 45 dozen Hardware, 9 dozen Step Ladders, 4 crates Wringers, 8 packages Agricultural Implements, 12 packages Meat Cutters, 2 cases Plows, 5 packages Wheelbarrows, 3 cases Shellers, 7 packages Wheelbarrows, 9 cases Axes, 2 cases Carpenters' Tools, 1 crate Step Ladders.

PER SHIP IMPERIAL, NOVEMBER 10, 1891, FOR SYDNEY, N. S. W.

By Edward Miller & Co.—17 packages Lamp Goods.
By Collins & Co.—100 dozen Edge Tools.
By Meriden Britannia Company.—6 boxes Silverware.
By Reed & Barton.—2 cases Silverware.
By Bradley & Hubbard Mfg. Company.—6 casks Lamp Goods.
By R. W. Forbes & Son.—3 cases Carriage Hardware, 4 cases Carriage Hardware.
By Winchester Repeating Arms Company.—85 Guns.
By Coombs, Crosby & Eddy.—36¼ dozen Agricultural Implements.
By McLean Bros. & Rigg.—46,000 Cartridges.
By Hartley & Graham.—1 case Primers, 10 cases Cartridges, 1 case Empty Shells, 4 cases Tools, 1 case Revolvers, 1 case Rods, &c., 1 case Rifles, 1 case Primers and Shells, 4 cases Cartridges, 4 cases Rifles, 1 case Fire Arms, &c., 3 cases Cartridges.
By C. Zollier.—192 pounds Wire.
By Edward Miller & Co.—12 packages Lamp Goods.
By W. H. Crossman & Bro.—9 dozen Churns, 2 cases Iron Nails.
By H. W. Peabody & Co.—10 cases Bolts, 1 case Carriage Hardware.
By McLean Bros. & Rigg.—2 packages Braces, 1 case Augers, 5 packages Meat Choppers, 3 cases Plumbs and Levels, 3 cases Egg Beaters, 2 packages Cow Bells, 7 crates Churns, 1 case Air Guns, 1 case Gun Implements, 3 cases Hammers, 5 cases Hardware, 8 cases Fire Arms, 2 cases Knives, 2 cases Saws, 4 cases Files, 6 packages Agate Ware, 12 cases Hatchets, 9 cases Cartridges.
By Australasian-American Shipping Company.—4 cases Hardware, 2 cases Emery Wheels, 4 cases Wood Hames

FOR NEWCASTLE.

By Australasian-American Shipping Company.—5 cases Axe Handles.
By W. H. Crossman & Bro.—13 crates Shellers, 1 case Hames, 2 cases Plated Ware, 1 case Cages, 1 case Sausage Stuffers, 6 Stoves, 4 cases Iron Nails, 10 packages Lamp Goods, 14 cases Hardware.
By McLean Bros. & Rigg.—2 crates Churns, 4 cases Levels, 4 cases Hatchets, 1 case Saws, 1 case Oil Stone, 1 case Curry Combs.
By H. W. Peabody & Co.—12 cases Hardware, 8 packages Lawn Mowers, 2 packages Lamp Goods, 2 boxes Hardware, 2 cases Nails, 1 case Guns.

FOR SYDNEY.

By Healy & Earl.—7 boxes Hardware, 2 packages Pulley Blocks.
By Strong & Trowbridge.—1 case Cutlery, 1 case Razors, 2 cases Planes.
By W. K. Freeman.—2 boxes Wrenches, 2 cases Hames, 1 box Rivets and Burrs, 1 case Hames, 1 case Wood Hames, 4 boxes Iron Carriage Hardware.
By Arkell & Douglas.—1 case Hoes, 1 case Hammers, 1 case Braces, 2 racks Churns, 1 case Wringers, 5 cases Hardware, 13 cases Axes.
By S. Hoffnung & Co.—6 cases Wringers, 1 case Squares, 1 box Pumps, 6 casks Lamp Goods, 16 boxes Scales, 3 packages Lawn Mowers, 2 cases Pencils, 5 cases Lawn Mowers, 2 barrels Hoes, 3 cases Bird Cages, 1 case Theremometers, 8 boxes Lamp Goods, 9 packages Lamp Goods, 1 case Saw Sets, 24 crates Tills, 10 cases Broilers, 2 barrels Hammers, 6 boxes Wrenches, 9 crates Churns, 31 cases Plumbs and Levels, 2 barrels Shovels, 9 cases Traps, 6 packages Lamp Goods, 4 crates and 4 boxes Fiber Ware, 6 crates Shellers, 1 case Tools, 2 cases Primers, 10 cases Cartridges, 36 cases Shot Cartridges, 145 boxes Tools, 5 casks and 6 boxes Lamp Goods.
By Arkell & Douglas.—14 cases Shellers, 38 packages Lampware, 3 cases Hardware, 4 cases Rakes, 32 cases Cartridges, 15 cases Mincers, 22 cases Nails, 85 cases Axes, 9 cases Wringers, 9 cases Sifters, 6 cases Pumps, 5 packages Sad Irons, 2 cases Scales, 5 cases Metal Polish, 3 cases Bolts, 1 case Brushes.

PER BRIG BALTIC, NOVEMBER 16, 1891, FOR PORT ELIZABETH, SOUTH AFRICA.

By Winchester Repeating Arms Company.—50,000 Cartridges.
By H. W. Peabody & Co.—1 case Hardware, 1 case Stepladders, 4 cases Hardware, 19 packages Wheelbarrows, &c.
By J. Norton's Son.—35,000 Cartridges, 6 casee Plow Fixtures.
By Coombs, Crosby & Eddy.—9 cases Pick Handles, 1 case Hardware.
By A. Field & Co.—24 Scales, 16½ dozen Tools, 3000 Bolts, 34 dozen Tools, 4 dozen Meat Cutters, 6 Guns, 10,000 Cartridges.
By R. W. Forbes & Son.—3 Pumps, 5 packages Hardware, 1½ dozen sets Sad Irons, 9 packages Agricultural Goods, 4 dozen Axes.
By W. H. Crossman & Bro.—87 cases Agricultural Implements and parts, 38 cases Hardware.

PER BARK PRIMROSE, NOVEMBER 14, 1891, FOR EAST LONDON, SOUTH AFRICA.

By Coombs, Crosby & Eddy.—72 cases Plows and Parts, 1 dozen Saws.
By W. H. Crossman & Bro.—11 cases Hardware, 80 crates Stoves, &c..

FOR PORT NATAL.

By Corner Bros. & Co.—114 cases Agricultural Implements, 9 cases Tools
By Arkell & Douglas.—100 reels Barb Wire, 1 case Plated Ware, 4 packages Corn Mills, 111 cases Plows, &c., 50 Shellers, 6 Hay Cutters, 60 kegs Nails, 29 cases Plow Parts, 126 cases Axes and Hatchets, 22 cases Hardware.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

Two features stand out in bold relief at the present time. One is the sudden and sharp advance latterly in the cost of Pig Lead. The other is the high cost of Brimstone. The former seems to have set at rest apprehensions as to a possible reduction in prices of White Lead this year, while the latter adds sufficiently to the cost of Ultramarine Blue and kindred goods to stiffen the market for the same. In other lines there are no exceptional conditions at the present time; certainly none that have any decided influence upon buyers' or sellers' operations. As regards trade, there is nothing of special interest to note. In all lines the dealings are of about the usual volume for the season, and chiefly of perfunctory character.

White Lead.—Some local jobbers are still making the concessions from the corroders' list that were referred to last week, and competitors follow suit in a certain degree, so that as far as second hands are concerned the market is in a somewhat unsettled condition. This causes some agitation that corroders take matters in hand and check the "cutting," but previous experience in that line is referred to by the latter interest, and the corroders seem to be content that the jobbers should work out their own salvation. The corroders' list for pure pigment remains unchanged, and prices for mixed Leads show only slight variation.

Zincs.—New orders for American Oxide have been very fair, but the volume of business is not above the average for the season and the general situation is practically the same as it was at the beginning of the month. Prices are steady for both wholesale quantities and jobbing parcels. There is no change whatever on imported kinds, the demand at present being moderate, while prices are steady.

Colors.—Ultramarine of the better grades is very firm, owing chiefly to enhanced cost of production, due to present high prices of Brimstone, and there is more tone to the market for other high-grade Blues also. In other lines nothing has transpired calculated to influence values in any remarkable degree. Business in the staple lines of both Dry and Oil Colors is rather slow at present, as also in Mixed Paints, other than those devoted to special uses, but artist materials and other holiday specialties are selling quite freely.

Miscellaneous.—The situation in the market for Putty remains practically the same as it was last week, sharp competition between local and outside manufacturers keeping values irregular. Deliveries of Whiting have continued on a large scale via water routes, and while there is little new demand at present, stocks are kept down to a point that holds prices steady. Block Chalk is coming by steamer in fairly liberal quantities and stock thus imported sells at $1.55 ex-vessel, or about 30¢ per vessel less than sail importation.

Oils and Turpentine.

The various branches of the market for Animal and Vegetable Oils have been comparatively free from new or striking feature during the past week. If anything Cotton Seed products are looking a shade firmer, although without radical change in value, but it does not appear that other Oils are more than holding their own. Buyers' operations in all branches are still confined chiefly to such quantities of goods as may be required to tide over immediate wants, in the absence of incentive for operating on a broader basis, but, as a whole, the shipments to Europe and the deliveries to the home trade are sufficient to keep matters in very fair shape.

Linseed Oil.—Outside of routine jobbing trade of the most pronounced type, there has been very little going on, and the market is without change in any particular. Out-of-town crushers are offering supplies temperately at present, and it is doubtful that they would fill orders at less than 35¢. City crushers keep their figures at 37¢ for domestic-seed product, and while free to admit that business is not at all brisk, state that the distribution is all that could reasonably be expected at this season.

Cotton-Seed Oils.—The market is looking a shade stronger. More Oil is being sent out on consignment than actually purchased for the European markets, and home-trade buyers are operating very cautiously. The receipts at this point continue rather light, however, and that fact serves to stiffen prices. Prime quality crude has been sold at 25¢ @ 26¢, against 24¢, the best price a week ago, and prime Summer Yellow is 1¢ better at 29½¢ @ 30¢. The local sales of crude amount to about 750 barrels. Of "off" grade refined, a block of 1500 barrels was sold at 27¢ @ 28¢, and 1000 barrels in lots went at within the same range.

Lard Oil.—In this line there has been a very fair business, and at a slightly lower range of prices the market is quite steady. Export movement is momentarily quiet, and exporters express the opinion that there will be no improvement until after the turn of the year.

Miscellaneous. — There have been few and only unimportant changes in prices of Sperm, Whale or Menhaden Oils, and apart from the ordinary home distribution the movement has continued light. Prices are steady all along the line. Cocoanut and Olive Oils are selling at practically the same prices that ruled a week ago, but the movement is rather slow and prices lean more or less in buyers' favor.

Spirits Turpentine.—Prices for wholesale lots have receded to 35¢ @ 35½¢, and it is stated that fair-sized parcels for near future delivery as well as ordinary spot lots have been sold at those figures. The market at present is dull, with rather weakish undertone.

Giant Sash Ribbon and Flat Pulley.

Bliss, Bullard & Gormley, 78 and 80 Randolph street, Chicago, are manufacturers of the Giant sash ribbon and flat pulley, illustrated in the accompanying cuts. The Giant ribbon, Fig. 1, is an alloy of aluminum with other metals, and is claimed by the makers to have greater strength and tenacity than any other sash ribbon made. The peculiar combination of metals employed in its manufacture

Fig. 1.—Giant Sash Ribbon.

produces a ribbon which is soft and pliable, and it is therefore absolutely noiseless in operation. It will not corrode, and, further, it presents a handsome appearance, as its color is a remarkable imitation of gold. It will be observed that the fastenings used are very simple. Two widths, $\frac{3}{8}$ and $\frac{1}{2}$ inch, are manufactured, to suit light or heavy sashes.

A special form of pulley has been designed to be used in connection with the Giant ribbon. This pulley, as will be seen by Fig. 2, has a flat face. This is in accordance with established rules for pulleys for bands and belts. The manufacturers claim that flanges on the pulley will not properly guide the ribbon, but that it is apt to ride over the flanges and get cut by coming in contact with the face of the pulley frame. In order to guide the ribbon they have adopted the plan of flanging the face of the frame itself, as shown in Fig. 3. The ribbon is thus guided properly to run square on the face of the

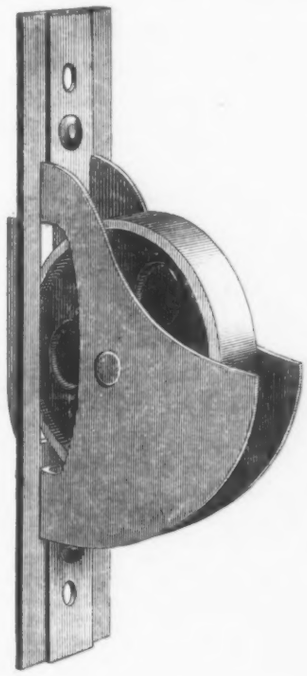


Fig. 2.—Flanged Face Flat Wheel Pulley.

pulley, and all danger of cutting is completely obviated. The pulley is made of wrought steel and is finished in seven styles, regular pattern, but any special

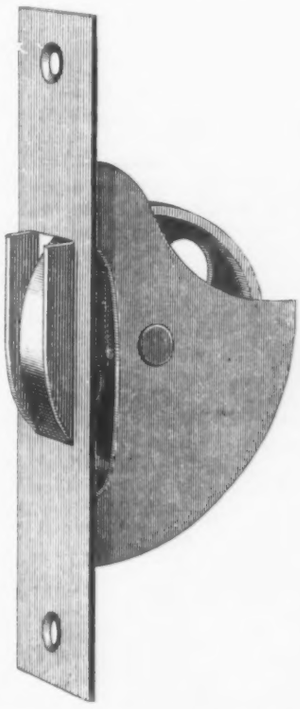


Fig. 3.—Showing Flanged Face of Frame.

finish can be made to order. An antifriction metal axle is also furnished at a slight extra charge.

Experience has proved that more goods can be sold at good prices firmly maintained than can be sold under the price-cutting policy. The merchants who have achieved fortune and success are those who have made it an invariable rule to make a fair profit on every sale.

The Perfect Double-Acting Barrel Spray Pump.

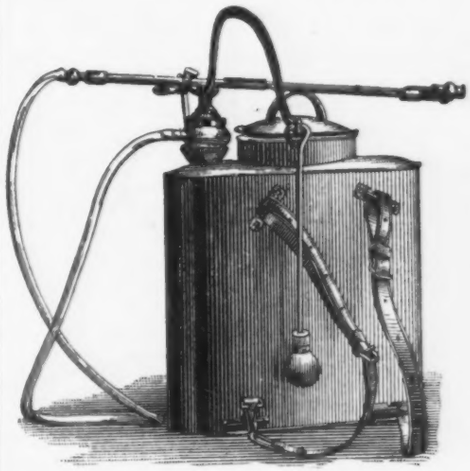
Albinson & Co., Washington, D. C., are offering this article, as illustrated herewith. It is an all-brass double-acting force pump, the material used preventing scales forming from the use of acids. The plunger has a ball valve and asbestos packing, while the lower valve is a ball valve. The point is made that there is no leather to dry up and harden if left standing a few days. This pump is also mounted

The Perfect Double-Acting Barrel Spray Pump.

on wheels and so geared to the wheels that the forward movement of the horse works the pump. If the operator should want to spray more in a particular place, the pump may be thrown out of gear and worked by hand. It is especially adapted for spraying liquid or poison on all kinds of trees, vines or plants, and as a horse spray is used in large vineyards, nurseries, &c.

The Improved Galloway Sprayer.

Albinson & Co., Washington, D. C., are introducing the sprayer illstrated herewith. It is a knapsack form of sprayer,



The Improved Galloway Sprayer.

and is made in two sizes—4 and 6 gallons. The pump is of the lift and force type, and is worked by the operator's left hand by means of a lever over the shoulder, leaving the right hand free to direct the

nozzle. The pump has a ball valve in the piston and a ball valve in the bottom. The air chamber is in the piston, by which the liquid is drawn from the reservoir, and is forced out of the nozzle in a continuous stream. The pump is provided with a drip cup to catch the liquid which might leak through the stuffing box, and is designed to keep it from running down the operator's back. A large screw cap is placed in the bottom of the reservoir, by which the lower valve may be reached in case of needed repairs, while the valve in the piston can be removed by unscrewing the top of the pump. This arrangement is referred to as being very essential, as it allows the operator to make necessary repairs without the necessity of going to a tinner to unsolder the sprayer. Another sprayer is made by this firm known as the New Galloway Sprayer. This is identical with the one described except that the air chamber is in the reservoir and the liquid is drawn from the reservoir and forced into the air chamber, and from there it is forced out in a stream which will continue to spray, it is stated, through the Vermorell nozzle, for three minutes after the pumping has been stopped.

Wakefield Vise Clamp.

J. E. Wakefield, Worcester, Mass., is offering the trade a vise clamp, as illustrated in Fig. 1. The clamp is for holding brass, nickel-plated and finished work of all descriptions, in connection with a vise, as shown in Fig. 2. The clamp is provided with a composition lining, so as not to injure the finest finish. It is adapted for use in any vise, and does not have to be fastened, as the tension of the spring holds it against the jaws of the vise. The side plates rest upon the vise and are pivoted to the center of the clamp, allowing it to be used at any angle, or either side up. The clamps are made in three sizes for holding from ⅛ to 1 inch pipe.

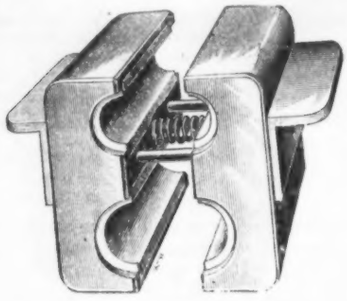


Fig. 1.—Wakefield Vise Clamp.

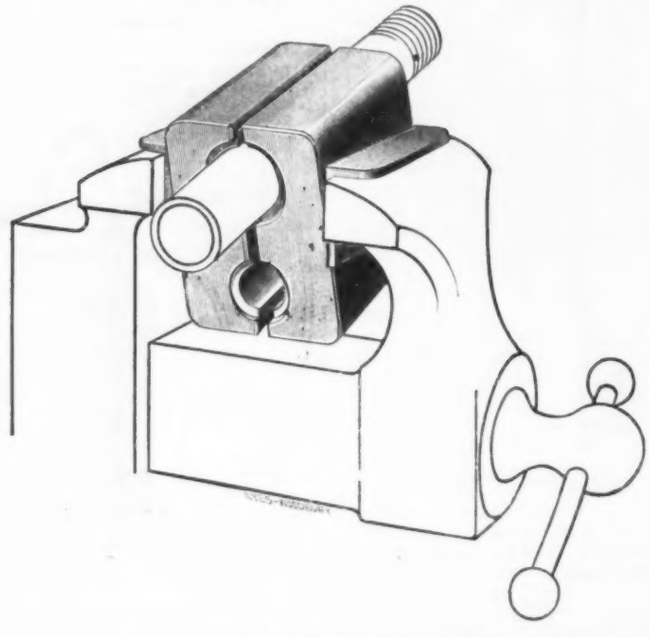


Fig. 2.—Wakefield Clamp as Used in Vise.

Acme Evaporating Dish.

The Stuart & Peterson Company, Philadelphia, Pa., are offering the trade an evaporating dish, as shown in Fig. 1. The dish is of cast iron, with detachable handles, as shown in Fig. 2, and has the inner surface covered with white enamel. The manufacturers claim that the enamel used on these dishes is especially adapted for chemical uses; that it will successfully resist the strongest acid and is so warranted by them. The dishes are made in six sizes, from 7 to 18 inches.

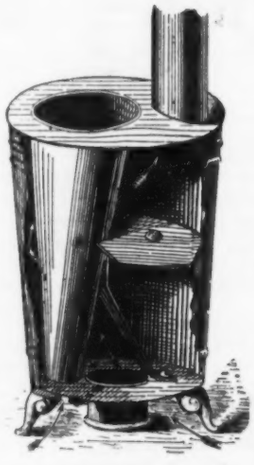
Fig. 1.—Acme Evaporating Dish.

Fig 2.—Showing Handles Detached.

If your business is worth doing at all, it is unquestionably worth doing well, and it is just as easy, nay in the long run far better, to do it well than to do it badly. There is much more satisfaction in it, there is less trouble, there is greater profit, and there is infinitely more comfort.—*Ex.*

Improved Detachable Radiating Drum.

In the accompanying illustration we present a broken view of an improved detachable radiating drum, which is being manufactured and placed on the market by Held & Gruenhagen of 924 and 926 Raymond avenue, St. Anthony Park, Minn. This drum the makers state is constructed upon a novel and ingenious plan, and is intended for heating rooms where a stove is not desirable. The drum has a radiating surface of nearly 2500 square inches, and is so arranged that the cold air is taken in at the bottom and discharged in a highly heated condition at the top. In taking the drum apart it is only necessary to remove one bolt, and when taken apart the drum may be easily cleaned. From an inspection of the engraving it will be seen that the drum is cylindrical and tapering in shape, so that it may be nested and shipped in "knock-down" style. The drum has cast-iron ends, the lower one being 14 inches and the upper one 16 inches in diameter. We understand that these ends will be sold separate when so desired. Reference is made to the ease with which the drums may be mounted, and where dealers employ no tinner the makers can furnish the drums ready for use. Reference is also made to the advantage of this drum when used over a gasoline stove for heating small rooms. The common iron drum stands 28 inches in

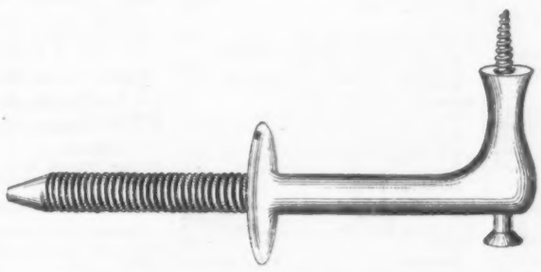


Improved Detachable Radiating Drum.

hight including the legs, and the steel and Russia iron drums 31 inches in hight. The manufacturers are meeting with a large demand for these goods, although they have been on the market but a very short time.

Wall-Rail Fastening and Support.

John Shull, Findlay, Ohio, is introducing the above article, as illustrated herewith. Its entire length is 7 inches, the

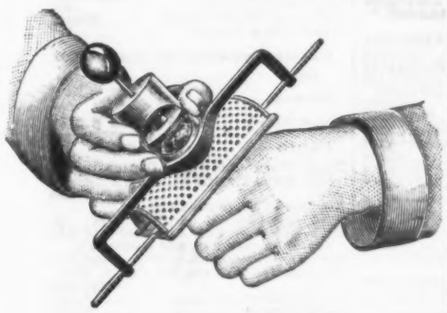


Wall Rail Fastening and Support.

screw being 3 inches. It is designed to be screwed into the wall and attached to the hand rail by the screw passing through the head. It is referred to as strong, simple, easy to put in place and as entirely out of the way of the hand. These are finished in japan and nickel.

The Edgar Nutmeg Grater.

The Edgar Mfg. Company, Reading, Mass., are introducing this article, as illustrated herewith. The grater is attached to a wire rod, which is provided under-



The Edgar Nutmeg Grater.

neath with an enameled wood handle, which is held in the hand. The nutmeg holder is fastened to a tinned iron traveler which slides upon the wire rod, while the nutmeg is held against the grater by a tin disk, operated by a spiral spring. The openings are prevented from clogging by the motions

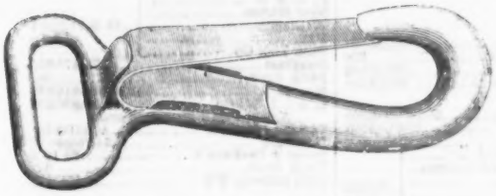


Fig. 1.—Covert's Triumph Snap.

Fig. 2.—Spring of Triumph Snap.

lengthwise, crosswise and at different angles of the nutmeg as it is passed over the grater. The manufacturers claim that the grater is cleanly, as it does not grate the operator's nails into the pastry; that it is economical, as it uses the nutmeg all up, instead of wasting 20 to 25 per cent. of it; that it does not tear the fingers, nor drop the nutmeg into the pastry. The grater is neatly made and presents an attractive appearance.

Covert's Triumph Snap.

The E. Covert Mfg. Company, Farmer Village, N. Y., are introducing a snap, as illustrated in Fig. 1. The shape of the spring, shown in Fig. 2, which is of the best spring steel, and the peculiar manner of attaching it to the body of the hook, are referred to as adding strength at the point of its fastening, where the straight or common springs are most weakened and always fail. It is stated that the shape of the spring also distributes the strain and gives it a greater degree of elasticity, causing it to retain its full power. The manufacturers claim that the snap is secure against being unsnapped by the animal, is easy to operate and that it cannot become clogged with dirt, ice or any other substance. They are made in all sizes, both loop and round eye, also open and swivel eye, and are finished in japan and C plate.

The Gibson Agricultural Works, Harriman, Tenn., are manufacturing the Bob White Plow Attachment, which in connection with any ordinary plow stock makes an excellent one-horse turning plow. No extra bolts are required for its adjustment on the stock, and the manufacturers allude to the economy secured by its use in the cost of a turning plow. The attachment is made in either cast iron, carbon metal or steel, and is guaranteed to give satisfaction.

Some men who have been in business for a very long time get into a certain groove and they never try or make an effort to get out of it. These are generally those of a class who believe that their business is not only satisfactory, but that it cannot be very much improved upon. There is, however, another class who are to some extent in the same condition, or rather frame of mind, but they belong to the ne'er-do-weels. Both of the above would under ordinary circumstances resent any advice given to them, and at the same time consider it a gross piece of interference with their own private affairs, but in doing so they unquestionably stand in their own light and must be conceded to be their own worst enemy. Egotism and impotence have many things in common, and our observation has led us to regard both as enemies to success. It is the bright man who is willing and able at all times to take advantage of any suggestion that may be made to him, who by far nowadays stands the best chance of success.

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CURRENT HARDWARE PRICES.

NOVEMBER 25, 1891

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' Prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Adjusters, Blind.
Domestic.....₩ doz $3.00, 33⅓&5%
Excelsior.....₩ doz $10.00.....50&10&2%
North's.....list net @10%
Zimmerman's—See Fasteners Blind

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils.—
Eagle Anvils, ₩ ℔ 10¢.....15@15&5%
Peter Wright's.....11@11½¢
Armitage's Mouse Hole.....10¼@11¢
Armitage's Mouse Hole, Extra...12@12½¢
Trenton.....10@10½¢
Wilkinson's.....10½@11¢
Moore & Barnes Mfg. Co.....33⅓%

Anvil Vise and Drill—
Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise, $3.00.....40&10%
Star.....45&5%

Apple Parers—See Parers, Apple, &c.

Augers and Bits—
Douglass Mfg. Co.....
Wm. A. Ives & Co.....
Humphreysville Mfg. Co.....
French, Swift & Co. (F. H. Beecher, P. S. & W. Co.....
Rockford Bit Company.....
Cook's, Douglass Mfg. Co.....
Cook's, N. H. Copper Co.....
Ives' Circular Lip.....
Patent Solid Head.....
C. E. Jenning & Co., No. 10, extension lip.....
C. E. Jennings & Co., No. 30.....
C. E. Jennings & Co., Auger Bits, ₩ set, 33⅓ quarters, No. 5, $5; No. 30, $5.50.....
Lewis' Patent Single Twist.....
Russell Jennings' Augers and Bits.....
Imitation Jennings' Bits.....
Pugh's Black.....
Car Bits.....
Car Bits, P. S. & W. Co.....
Snell's Car Bits.....
L'Hommedieu Car Bits.....
Forstner Pat. Auger Bits.....
Cincinnati Bell-Hangers' Bits.....

Bit Stock Drills—
Morse Twist Drills.....
Standard.....
Cleveland.....
Syracuse, for metal.....
Syracuse, for wood (wood list).....
Cincinnati, for wood.....
Cincinnati, for metal.....

Expansive Bits—
Clarks' small, $18; large, $26.....
Ives' No. 4, ₩ doz $60.....
Swan's.....
Steer's, No. 1, $26; No. 2, $22.....
Stearns' No. 2, $48.....

Gimlet Bits—
Common.....₩ gross $2.75@$3.25
Diamond.....₩ doz $1.10.....
Vee.....
Double Cut, Shevardson's.....
Double Cut, Ct. Valley Mfg. Co.....
Double Cut, Hartwell's, ₩ gro.....
Double Cut, Douglass'.....
Double Cut, Ives'.....

Hollow Augers—
Ives.....
French, Swift & Co.....
Douglass'.....
Bonney's Adjustable, ₩ doz $48.....
Stearns'.....
Ives' Expansive, each $4.50.....
Universal Expansive, each $4.50.....
Wood's.....
Cincinnati Adjustable.....
Cincinnati Standard.....

Ship Augers and Bits—
L'Hommedieu's.....
Watrous'.....
Snell's.....
Snell's Ship Auger Patt'n Car Bits.....

Awl Hafts—See Hafts, Awl.

Awls—
Awls, Sewing, Common.....₩ gr $1.70, 45%
Awls, Should. Peg, ₩ gr $2.45, 50@50&10%
Awls, Pat. Peg...₩ gr 63¢.....50@50&10%
Awls, Shouldered Brad...2.70 ₩ gr.....35%
Awls, Handled Brad...$7.50 ₩ gr.....45%
Awls, Handled Scratch ₩ gr, $7.50.35&10%
Awls, Socket Scratch, ₩ doz, $1.50.25&30%

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

	Plain.	Beveled.
First quality, best brands	$7.00 @	$7.50
First qual., other brands	6.62½ @ 6.75	
Second quality	6.00	6.50

Axle Grease—See Grease, Axle.

Axles—
No. 1 4¼@5¢, No. 2 5½@6¼¢.....
Nos. 7 to 14.....55&5%
Nos. 15 to 18.....47½% } 3% cash
Nos. 19 to 22.....70% }
Concord Axles, loose collar.....5½@6¢
Concord Axles, solid collar.....6½@7¢
National Tubular Self-Oiling.....33⅓&33⅓&5%

Bag Holders.—See Holders, Bag.

Balances—
Spring Balances.....40%

	No. 2000	20	30
Chatillon, ₩ doz	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Barb Wire.—See Wire, Barb.

Bars.
Crow—
Cast Steel.....₩ ℔ 3½¢
Iron, Steel Points.....₩ ℔ 3¢

Basins, Wash—
Standard Fiberware, No. 1, 10½-inch, $2; 12-inch, $2.25; 13½-inch, $2.75; 15-inch, $3.25.

Beams, Scale—
Scale Beams, List Jan. 12, '82...50&10@50&10&2%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters—
Egg—
Dover.....₩ doz $1.50
Duplex (Standard Co.).....₩ doz $1.25
Rival (Standard Co.).....₩ doz $1.00
Duplex Extra Heavy (Standard Co.)...₩ doz $3.50
Bryant's.....₩ gro $14.00
Double (H. & R. Mfg. Co.), ₩ gro. No. 0, $12.00; No. 1, $15.00; No. 2.....$36.00
Easy (H. & R. Mfg. Co.).....₩ gro $12.00
Triple (H. & R. Mfg. Co.).....₩ gro $16.50
Spiral.....₩ gro $4.25 @ 4.50
Improved Acme (H. & R. Mfg. Co.).....₩ gro $9.00
Paine, Diehl & Co.'s.....₩ gro $24.00
Silver & Co.....₩ doz $5.50
Culinary—
Keystone, P.D.&C., Each, No. 1, $1; No. 2, $2.....20 %
Bells—
Cow—
Common Wrought.....60&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Kentucky Durham.....70&10
Dodge, Genuine Kentucky.....70@70&10%
Texas Star.....50&10@50&10&5%
Door—
Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Taylor's.....25&10%
Crank Brooks'.....50&10&2%
Crank Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated.....net
Lever, Taylor's Japanned.....25&10%
Lever, R. E. M. Co.'s.....50&10&2%
Pull, Brook's.....50&10&2%
Electric,
Wollensak's.....20%
Bigelow & Dowse.....20%
Taylor's.....20%
Hand—
Light Brass, Extra Heavy, White Metal.....} See Trade Report
Silver Chime.....33⅓&10%
Globe Cone's Patent).....25&10@35%
Miscellaneous—
Call.....40@40&5%
Farm Bells.....₩ ℔ 3¢@3½¢
Steel Alloy Church and School Bells..40%

Bellows—
Blacksmiths'.....60&5@65%
Molders'.....40@40&10%
Hand Bellows.....40&10@50%

Belting, Rubber—
Common Standard.....70@70&10&5%
Standard.....70@70&5%
Extra.....60@60&10%
N.Y.B.&P.Co., Carbon.....60%
N.Y.B.&P.Co., Diamond.....50%
N.Y.B.&P.Co., Para.....40%

Bench Stops—See Stops, Bench.

Benders and Upsetters, Tire.
Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%

Bits—
Auger, Gimlet, Bit Stock Drills, &c., see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—
Ordinary Tackle, list May 20, 1889.....70&10@—%
Cleveland Block Co., Mal. Iron.....50%
Moore's Novelty, Mal. Iron.....50%
Sure Grip Steel Tackle Blocks.....25%

Boards, Sieve.
Wood Lined Crystal.....50%
Oxidized.....45%
Embossed.....50%
Paper Lined Zinc.....55%
Crystal.....55%
Embossed.....55%
New Tacoma.....55%

Bolts—
Carriage, Machine, &c.—
Com. list June 10, '84.....70&10&12½&2%
Genuine Eagle, Norway, list Oct., '84...80@80&10%
Phila. pattern, list Oct. 7, '84..75@75&10%
R.B.&W., old list.....70%
Machine, list Jan. 1, 1890.....75&10@75&10&5%
Bolt Ends, list Jan. 1, 1890.....75&10@75&10&5%
Door and Shutter—
Cast Iron Barrel, Square, &c..70@70&10%
Cast Iron Shutter Bolts.....70@70&10%
Cast Iron Chain (Sargent's list)...65&10%
Ives' Patent Door Bolts 60&10@60&10&5%
Wrought Barrel.....70@70&10%
Wrought Square.....70@70&10%
Wr't Shutter, all Iron, Stanley's..60&10%
Wr't Shutter, Brass Knob, " ..40&10%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list...55&10%
Wr't Sunk Flush, Stanley's list...50&10%
Wr't B.K.Flush. Com'n " ...55&10%

Stove and Plow—
Stove.....60%
Plow.....60&5%
R. B. & W., Plow.....55%
Tire—
Common, list Feb. 28, '83.....65%
Port Chester Bolt and Nut Company:
Empire, list Feb 28, '83.....65%
Keystone, Philadel., list Oct. '84....80%
Norway, Phila., list Oct. '84.....75%
American Screw Company:
Norway, Phil., list Oct. 16, '84.....75%
Eagle, Phil., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
R.B.&W., Philadel., list Oct. 16, '84.....80%

Borers, Tap.
Common and Ring.....20&10%
Ive's Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....30&10@30%
Clark's.....33⅓@35%

Borax.....₩ ℔ 9½@10½¢

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon.
Per ℔.....2¾¢

Braces.—
American Bit Brace Co.:
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 15, 26, 36, 37.....70&10&5%
Ball Braces, net.....$1.12 to $1.35¢
Amidon's
Barker's Imp'd Plain.....75&10 @80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Rachet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $3.10; 10 in.....$2.95
Buffalo Ball.....$1.10@$1.1
Barber's,
Nos. 10 to 16.....50%
Nos. 30 to 33.....50%
Nos. 40 to 63.....50&10%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, $1.10@$1.15
Bartholomew's,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Fray's Genuine Spofford's..50&5@50&10%
Fray's No. 70 to 120, 81 to 123, 207 to 414.....50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barbers.....60&5%
Spofford.....60&5@60&10%
Osgood's Ratchet.....40&10@50%
P. S. & W. Co., Peck's Patent.....60%

Brackets—
Shelf, plain.
Regular list.....65@70%
Sargent's list.....66⅔@66⅔&10%
Shelf, fancy.
Sargent's list.....66⅔@66⅔&10%
Other makes at a wide range of prices.

Bright Wire Goods—See Wire.

Broilers—

	Inch	9	10	9x11
Henis' Self-Basting.	Per doz	$4.50	5.50	6.50

New Haven.....50%
Wire Goods Co.....65&10%
Morgan Odorless.....₩ doz $12, 33⅓%

Buckets, Well.
Galvanized—
Hill's.....₩ doz. 12 qt, $4.25; 14 qt, $5.2.
Iron Clad.....₩ doz. 14 qt, $4.25@$4.5
Helwig's Flat Iron Band.....$3.75
Helwig's Wired Top.....₩ doz $4.00

Bull Rings—See Rings, Bull.

Butchers' Cleavers—See Cleavers Butchers'.

Butts—
Brass—
Wrought Brass.....75&10@80%
Cast Brass, Tiebout's'.....50%
Cast Brass, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%
Cast Iron—
Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns..
Parliament Butts.....
Mayer's Hinges.....
Loose Pin, Acorns.....
Loose Pin, Acorns, Japanned...
Loose Pin, Acorns, Japanned, Plated Tips.....} ..70&10 @75%
Wrought Steel—
Fast Joint, Narrow.....
Fast Joint, Lt. Narrow.....
Fast Joint, Broad.....
Loose Joint, Broad.....
Table Butts, Back Flaps, &c.....
Inside Blind, Regular.....
Inside Blind, Light.....
Loose Pin.....} .70&10 @75%
Bronzed Wrought Butts.....50%

Calipers—See Compasses.

Calks, Toe—
Gautier, One Prong, Blunt.....5½@6¢
Burke's, One Prong, Blunt.....5½@6¢
Burke's, Two Prong, Blunt.....7½@8¢
Burke's, One Prong, Sharp.....6½@7¢

Can Openers—See Openers, Can.

Caps—
Percussion, ₩ 1000—
Hicks & Goldmark's and Union Metallic Cartridge Co.
F. L. Waterproof, 1-10's.....35@37¢
E. B. Trimmed Edge, 1-10's.....47@50¢
E. B. Grnd. Edge, Cent. Fire, 1-10's.....47@50¢
Musket Waterproof, 1-10's.....50@53¢
G. D.....27@30¢
S. B. Genuine Imported.....45¢
Eley's E. B.....55¢ @ 58¢
Eley's D Waterproof, Central Fire...$1.50
Primers—
Berdan Primers, $1.00.....2%
U. L. Caps (for Sturtevant Shells) $1.00.....2%
All other Primers, $1.20.....2%

Cards—List January 28, 1891.
Watson's Cotton, Wool, Horse and File.....25%

Carpet Stretchers—See Stretchers Carpet.

Carpet Sweepers—See Sweepers, Carpet.

Cartridges—
Rim Fire Cartridges.....50&5&2%
Rim Fire Military.....15&2%
Cent. Fire, Pistol and Rifle.....25&5&2%
Cent. Fire, Military and Sporting.....15&5&2%
Blank Cartridges, except 22 and 32 cal., additional 10% on above discounts.
Blank Cartridges, 22 cal., $1.75.....2%
Blank Cartridges, 32 cal., $3.50.....2%
Primed Shells and Bullets.....15&5&2%
U. B. Caps, Round Ball, $1.75.....2%
U. B. Caps, Con. Ball, Swgd., $3.00.....2%

Casters—
Bed.....
Plate.....} Brass....55@55&10%
Shallow Socket.....} Others...60@60&10%
Deep Socket.....40&10%
Yale Casters, list May, 1884...30&10@40%
Yale, Gem.....60@60&5%
Martin's Patent (Phœnix).....45&10@50%
Payson's Anti-friction.....60@60&10%
Giant Truck Casters.....30%
Stationary Truck Casters.....50&10%
Socket Truck Casters.....30%

Cattle Leaders—See Leaders, Cattle.

Cement.
Victor Elastic.....5 ℔ pails ₩ ℔ 5¢

Chain—
Trace, Wagon and Fancy Chains, List revised April 21, 1890.....60@60&5%
American Coil, in cask lots.

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.75	5.45	4.55	4.00	3.65	3.50	3.40	3.30

Less than cask lots, add ½¢@1¢ ₩ ℔.
German Coil, list Oct. 6, 1890...60@60&5%
German Halter Chain, list Oct. 6, 1890.....60@60&5%
Covert Halter.....60&5%
Covert Traces.....55@5%
Covert Heel Chain.....60&5%
Oneida Halter Chain.....60@60&5%
Galvanized Pump Chain.....₩ ℔ 5½@6¢
Jack Chain, Iron.....75&10@80%
Jack Chain, Brass.....75@75&10%

Chalk—
White, case lots, ₩ gr 50¢; small lots 55@56¢
Red, case lots...₩ gr 67¢; small lots 77@78¢
Blue, case lots...₩ gr 75¢; small lots 85¢
See also Crayons.

Chalk Lines—See Lines.

Chisels—
Socket Framing and Firmer.
P. S. & W.....
New Haven.....
Witherby.....
Mix.....
Ohio Tool Co.....} ..75 @ 75&10%
Douglass.....75@75&5%
Buck Bros.....30%
Merrill.....60&10@60&10&5%
L. & I. J. White.....50@50&5%
Tanged and Miscellaneous.
Tanged Firmers.....40&10@50
Butchers'.....$4.75@$5.00
Spear & Jackson's.....$5 to £
Buck Bros.....30%
Cold Chisels, ₩ ℔.....15@16%

Chucks—
Beach Pat.....each, $3.00.....30%
Morse's Adjustable, each, $7.00, 20@30&5%
Danbury.....each, $6.00, 30@30&5%
Syracuse, Bals Pat.....25%
Graham Patent.....33⅓%
Skinner's Patent Chucks.
Combination Lathe Chucks.....33⅓%
Universal Lathe Chucks.....40%
Independent Lathe Chucks.....40%
Drill Chucks.....15%
Union Mfg. Co.,
Victor.....$3.50, 25%
Combination.....40%
Universal.....40%
Independent.....40%

Churns.
Tiffin Union, each, 5 gal. $3.25; 7 gal., $3.75; 10 gal. $4.25.
McDermaid Star Barrel Churn, each, 6 gal., $2.50; 10 gal., $2.75; 15 gal. $3.00 20 gal., $3.25.

Clamps—
R. I. Tool Co.'s Wrought Iron.....25%
Adjustable, Cincinnati.....15&10%
Adjustable, Hammers.....15%
Adjustable, Stearn's.....30@30&10%
Stearn's Adjustable Cabinet and Corner.....30@30&10%
Cabinet, Sargent's.....66⅔&10%
Carriage Makers', Sargent's.....70&10%
Carriage Makers', P., S. & W. Co..40&10%
Eberhard Mfg. Co.....40&5@40&10%
Warner's.....40&10@40&10&5%
Saw Clamps, see Vises, Saw Filers'.
Carpenters', Cincinnati.....25&10%

Cleavers.
Butchers'.
Bradley's.....25@30%
L. & I. J. White.....20&5%
Beatty's.....40@40&5%
New Haven Edge Tool Co.'s.....40%
P., S. & W.....33⅓&5@33⅓&10%
Foster Bros.....30%
Schulte, Lohoff & Co.....40@40&5%

Clips—
Norway, Axle, ¼ & 5-16.....55&5&5%
2nd grade Norway Axle, ¼ & 5-16. 65&5%
Superior Axle Clips.....66⅔&5@70%
Norway Spring Bar Clips, 5-16..20&5&5%
Wrought-Iron Felloe Clips.....₩ lb, 5½¢
Steel Felloe Clips.....₩ lb, 6¢
Baker Axle Clips.....25%

Cloth and Netting, Wire—See Wire, &c.

Cockeyes.....50%

Cocks, Brass.
Hardware list.....5 0&2%

Coffee Mills—See Mills, Coffee

Collars, Dog, &c.
Medford Fancy Goods Co.....40&10%
Embossed, Gilt, Pope & Steven's list 30&10%
Leather, Pope & Steven's list.....40%
Brass, Pope & Steven's list.....40%
Chapman Mfg. Company.....50&10@60%

Combs, Curry.
Fitch's.....50&10@50&10&10%
Rubber, per doz $10.00.....20%
American Curry Comb Co.....

Compasses, Dividers, &c.—
Compasses, Calipers, Dividers.70@70&10%
Bemis & Call Co.'s
Dividers.....60&5%
Compasses & Calipers.....50&5%
Wing and Inside or Outside.....50&5%
Double.....60%
(Call's Pat. Inside).....30%
Excelsior.....50%
J. Stevens & Co.'s.....25&10%
Starrett's
Spring Calipers and Dividers....25&10%
Lock Calipers and Dividers.....25%
Combination Dividers.....25%

Coopers' Tools—See Tools, Coopers'.

Cord—
Sash.
Common.....₩ lb, 10¢ @ 11¢
Patent, good quality.....₩ lb, 12 @ 12¢
White Cotton Braided, fair.₩ lb, 24½@25¢
Common Russia Sash.....₩ lb, 12½@13¢
Patent Russia Sash.....₩ lb, 14¢
Cable Laid Italian Sash.....₩ lb. 21@22¢
India Cable Laid Sash.....₩ lb, 12¢
Silver Lace—
A Quality, White, 50¢.....25 %
A Quality, Drab, 55¢.....25 %
B Quality, White, 30¢.....10 %
B Quality, Drab, 35¢.....10 %
Sylvan Spring. Extra Braided White,34¢
Sylvan Spring, Extra Braided, Drab..39¢
Semper Idem, Braided, White.....30¢
Egyptian, India Hemp, Braided.....26¢
Massachusetts, White.....20¢
Samson—
Braided, White Cotton, 50¢..30@30&5%
Braided, Drab Cotton, 55¢..30@30&5%
Braided, Italian Hemp, 55¢..30@30&5%
Braided, Linen, 80¢.....30@30&5%
Tate's Cotton Braided, White.₩ lb,28¢.10%
Wire Picture.
Braided or Twisted.....75&10%

Corkscrews—See Screws, Cork.

Corn Knives and Cutters—See Knives, Corn.

Crackers, Nut—
Table (H. & B. Mfg. Co.).....40%
Blake's Pattern.....₩ doz $2.00, 10%
Turner & Seymour Mfg. Co.....50%

Cradles—
Grain.....50&5&2@50&10&2%

Crayons.
White Crayons, ₩ gross.....10¢
D. M. Stewart Mfg. Co., Metal Workers, ₩ gr, $2.50.....25%
D. M. Stewart Mfg. Co., Rolling Mill, ₩ gr, $2.50.....25%
See also Chalk.

Crow Bars—See Bars, Crow.

Curry Combs—See Combs, Curry.

Curtain Pins—See Pins Curtain.

Cutters—
Meat.
Dixon's ₩ doz.....40&5%
Nos..... 1 2 3 4
$14.00 $17.00 $19.00 $20.00
Woodruff's ₩ doz.....40&5%
Nos..... 100 150
$15.00 $18.00
Hales Pattern ₩ doz.....70@70&5%
Nos..... 11 12 13
$27.00 $33.00 $45.00
American.....5%
Nos..... 1 2 3 4 5 5
Each.....$5 $7 $10 $25 $50 $60
Enterprise.....30%
Nos..... 10 12 22 32 42
Each.....$3 $2.50 $4 $6 $15
Great American Meat Cutter.....30%
Nos..... 112 116 118 120 122
Each....$2.00 $2.75 $3.00 $2.50 $4.00
Miles' Challenge ₩ doz.....45@45&10%
Nos..... 1 2 3
$22.00 $30.00 $40.00
Home No. ..... ₩ doz $20.00, 55&10%
Draw Cut, each:
Nos..5 2 6 8
$50 $75 $80 $225 .....20@25%
Beef Shavers (Enterprise).....20&10@30%
Little Giant (P. S. & W. Co.).....50%
Chadborn's Smoked Beef Cutter, ₩ doz $66.00
Tobacco.
Champion.....20&10@30%
Wood Bottom.....₩ doz $5.00@$5.25
All Iron.....₩ doz $4.25
Nashua Lock Co.'s..₩ doz, $18.00 50@55%
Wilson's.....55%
Sargents's.....₩ doz, $24, 55&10%
Acme.....₩ doz $20.00, 40%
Washer.
Smith's Pat.....₩ doz $12.00, 20&10&10%
Johnson's.....₩ doz $11.00, 33⅓%
Penny's ₩ doz Pol. $14; Jap'd, $16.00, 55%
Appleton's.....₩ doz $16.00, 60&10%
Bonney's.....30&10%
Cincinnati.....25&10%

Dampers, &c—
Dampers, Buffalo.....40&10%
Buffalo Damper Clips.....40&10%
Crown Damper.....40%
Excelsior.....40&10%

Diggers, Post Hole, &c.—
Samson Post Hole Digger, ₩ doz $36.00, 25%
Fletcher Post Hole Augers, ₩ doz $36, 20%
Eureka Diggers.....₩ doz $12.50@14.00
Leed's.....₩ doz $8.00@9.00
Vaughan's Post Hole Auger, ₩ doz $13.00@14.00
Kohler's Little Giant.....₩ doz. $18.00
Kohler's Hercules.....₩ doz. 15.00
Kohler' New Champion.....₩ doz. $9.00
Schniedler.....₩ doz. $18.00
Ryan's Post Hole Diggers..₩ doz $24.00
Cronk's Post Bars, ₩ doz $60.00, 50&5@50&10%
Gibbs Post Hole Digger, ₩ doz $30.00, 50%
Imperial, ₩ doz $15.....45%

Dividers—
See Compasses.

Dog Collars—See Collars, Dog, &c.

Door Springs—See Springs, Door.

Drawers.
Money, ₩ doz.....$18&$20

Drawing Knives—See Knives, Drawing.

Drills and Drill Stocks—
Blacksmiths'.....each $1.75
Blacksmiths' Self-Feeding, each $7.50,20%
Breast, P. S. & W.....40&10%
Breast, Wilson's.....30&5%
Breast, Millers Falls.....each $3.00, 25%
Breast, Bartholomew's.....each $2.50, 25&10@40%
Ratchet, Merrill's.....20@20&5%
Ratchet, Ingersoll s.....25%
Ratchet, Parker's.....20@20&5
Ratchet, Whitney's.....20&10%
Retchet, Weston's.....20@25%
Ratchet, Moore's Triple Action..25@30%
Ratchet, Curtis & Curtis.....30%
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00.....20&10%
Wilson's Drill Stocks.....10%
Automatic Boring Tools.....$1.75@$1.85
Twist Drills—
Morse.....50&10&5%
Standard.....50&10&5%
Syracuse (Metal list).....50&10%
Cleveland.....50&10&5%
Williams.....50&10&10%
New Process.....50&10&5%
Graham's Pat. Groove Shank 50&10a5%

Drill Bits or Bit Stock Drills—
See Augers and Bits.

Drill Chucks.—See Chucks.

Dripping Pans—See Pans, Dripping.

Drivers, Screw.
Douglas Mfg. Co.....20@20&10%
Disston's.....60%
Buck Bros.....30%
Stanley R. & L. Co.'s
Varnished Handles.....65&10%
Black Handles.....60&10%
Sargent & Co.'s
No. 1 Forged Blade.....60&10&10%
Nos. 20, 30 and 60.....65%&10&10%
P. S. & W.....70 %
Knapp & Cowles:
No. 1.....60&20@70%
No. 2.....60&10&10@70&5%
No. 3.....60&5@60&10%
Nos. 4 and 00, Acme and Ideal..50& 5@50&10&5%
Stearns'.....35&10&5%
Gay & Parsons.....35%
Champion.....25&10%
Clark's Pat.....30@33⅓%
Crawford's Adjustable.....30%
Elirich's Socket and Ratchet..25@25&10%
Allard's Spiral, new list.....25%
Kolb's Common Sense ₩ doz $6.00,25&10%
Syracuse Screw-Driver Bits....50&30&5%
Screw-Driver Bits.....₩ doz. 50@75¢
Screw-Driver Bits, Parr's.....₩ gro $6.25
Fray's Hol. Hdle. Sets, No. 3, $12.00, 25@25&10%
P. D. & Co.'s all Steel.....50%
Cincinnati.....25&10%
Brace Screw Drivers.....25&10%
Buck Bros.' Screw-Driver Bits.....

Egg Beaters.—See Beaters, Egg.

Egg Poachers.—See Poachers, Egg.

Electric Bell Sets.—See Bells, Electric.

Emery.—No. 4 to No. 54 to Flour, CF

	46 gr.	150 gr.	F. FF.
Kegs, ₩ lb.....4½¢	5 ¢	2½¢	
½ kegs, ₩ lb...4¾¢	5½¢	2¾¢	
¼ kegs, ₩ lb...5 ¢	5¾¢	3 ¢	
10-lb cans, 10 in case.....6 ¢	6¼¢	5 ¢	
10-lb cans, less than 10.....10 ¢	10 ¢	7½¢	

Enameled and Tinned Ware—See Ware, Hollow.

Escutcheon Pins—See Pins, Escutcheon.

Escutcheons.
Door Lock....Same dis as Door Locks.
Brass Thread.....60@60&10%
Wood.....25%

Expanded Metal.
List No. 5.
Lathing.....10%
Fencing, Painted Sheets.....20%
Netting, Painted Sheets.....30%
Door Mats, Galvanized.....25%
Window Guards, Paneled.....15%
Tree Guards, Paneled.....15%

Extractors, Lemon Juice—See Squeezers, Lemon.

Fasteners, Blind—
Mackrell's, ₩ doz. $1.00.....20@20&10%
Van Sand's Screw Pat., $15 ₩ gr..60&10%
Van Sand's Old Pat., $15.00 ₩ gr..55&10%
Austin & Eddy No. 2008 ₩ gr.....$9.00
Security Gravity, ₩ gr.....$9.00
Zimmerman's.....45 %

Faucets.—
Fenn's.....40%
Bohren's Pat. Rubber Ball.....25%
Fenn's Cork Stops.....33⅓%
Star.....60%
Frary's Pat. Petroleum.....40&5&2%
B. & L. B. Co.
West's Lock, Open and Shut Key...50%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list..60%
Metallic Key, Leather Lined....60&10@ 60&10&10%
Cork Lined.....70&5@70&10%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl lots....50&10%
John Sommers'
Peerless Best Block Tin Key.....40%
LXL, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection, Fla. Red Cedar.....50%
Goodenough Cedar.....50%
Boss Metallic Key.....50%
Reliable Cork Lined.....60%
Western Pattern Cork Lined.....50%
Self-Measuring
Enterprise, ₩ doz $50.00.....20&10%
Lane's, ₩ doz $36.00.....25&10%
Victor, ₩ doz $36.00.....25&10%

Felloe Plates—See Plates, Felloe.

Fifth Wheels.—
Deroy and Cincinnati.....45&5%
Brewster.....50&5%

Files—
Domestic—
Nicholson Files, Rasps, &c.....60&10@60&10&5%
Nicholson (X. F.) Files.....25%
Nicholson's Royal Files (Seconds).....75% (extra prices on certain sizes)
G. & H. Barnett (Black Diamond).....60&10@60&10&5%
Eagle.....60&10&5@60&10&10%
Other makers, best brands60&10@60&20%
Fair brands.....60&10&10@70&5%
Second quality.....70&10@75&10%
Heller's Horse Rasps.....50&7½@50&10%
McCaffrey's Horse Rasps.....50&10%
Cheisea Horse Rasps, Hand Cut...50&10%
Imported—
Butcher.....Butcher's list, 20%
Stubs.....Stubs list, 25@30%

Fixtures.
Grindstone—
Sargent's Patent.....70&10%
Reading Hardware Co.....30&10%
P., S. & W. Co.....50&10%

Fluting Machines—See Machines, Fluting.

Fluting Scissors—See Scissors, Fluting.

Fodder Squeezers—See Squeezers, Fodder.

Forks—
Hay, Manure, &c., Asso List..65&5@65&10%
Hay, Manure, &c., Phila. List. 60@60&5%
Plated, see Spoons.

Frames—
Saw—
White Vermont.....₩ gro $9.00@10.00
Red, Polished and Varnished.....₩ doz $1.50, 25%
Screen, Window and Door—
Porter's Pat. Window and Door Frame. 33⅓&10%
Warner's Screen Corner Irons..33⅓@
Stearns' Frames and Corners..25@25&10%
Cortland.....40@40&5%

Freezers, Ice Cream—
White Mountain.....60@60&5%
Granite State.....65@65&5%
Arctic.....70@70&5%
American.....60%
Buffalo Champion.....65@65&5%
Shepard's Lightning.....65@65&5%
Gem.....65%
Blizzard.....70%
Double Action Crown.....60%
Crown.....60%
Star.....60%
Peerless.....60&10%
Giant.....60%
Zero.....60&10&10%
Boss and Pet.....60&10&10&10%
Keystone, P. D. & Co., each $1.50.....20%

Fruit and Jelly Presses—See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.

Funnels.
Gersdorff's Perfection, Standard and Globe; Tin, 1 gro., 10 %; 2 to 5 gro., 20 %; 5 to 10 gro.....30 %
Copper, 1 to 6 doz., 15 %; 6 to 12 doz., 20 %; over 12 dz.....25 %

Furnaces, Soldering.
Burgess No. 3 Gem, tin reservoir....$7.00
Burgess No. 3 Gem, copper reservoir, 8.50

Fuse—Dis. 12½%. ₩ 1000 ft
Common Hemp Fuse, for dry ground..$2.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground.. 3.35
Double Taped Fuse, for very wet gr. 4.25
Triple Taped Fuse, for very wet gr.. 5.60
Small Gutta Percha Fuse, for water. 7.10
Large Gutta Percha Fuse, for water.12.00

Gates, Molasses—
Stebbin's Pattern.....80@80 &5%
Stebbin's Genuine.....60&10&10%
Stebbin's Tinned Ends.....40&10%
Chase's Hard Metal.....50&10%
Bush's.....20%
Lincoln's Pattern.....70@70&10%
Weed's.....20&10%
Boss, ₩ doz:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10.....60&10&10%

Gauges.
Marking, Mortise, &c.....60&10%
Starrett's Surface, Center and Scratch. 25&10%
Wire, Wheeler, Madden & Co.....10%
Wire, Morse's.....25%
Wire, Brown & Sharpe's.....10@20%
Wire, P. S. & W. Co.....10&10%

Gimlets—
Nail and Spike.....50&10&5%
"Eureka" Gimlets.....40&10%
"Diamond" Gimlets.....₩ gr $5.00
Double Cut, Shepardson's.....45@45&5%
Double Cut, Ives'.....60@60&5%
Double Cut, Douglass'.....40&10%
"Bee," ₩ gr $12.....25@25&5%

Glue—
Le Page's Liquid.....25@25&5%
Upton's Liquid.....35%
Improved Process.....25@25&5%

Glue Pots—See Pots, Glue.

Grease, Axle.
Fraser's.....Keg ₩ lb 4¢, Pail ₩ lb 5¢
Fraser's, in boxes.....₩ gr $9.50
Dixon's Everlasting, in bxs..₩ doz 1 lb $1.20; 2 lb $2.00
Dixon's Everlasting....10-lb pails, ea. 85¢
Lower grades, special brands, ₩ gr $5.50@$7.00

Grindstones—
Small, at factory.....₩ ton $7.50@9.00
Family, regular list.....60%
Family, Cleveland Stone Co.....30 %

Grindstone Fixtures—See Fixtures, Grindstone.

Hack Saws—See Saws.
Hafts, Awl.
Sewing, Brass Fer.₩ gr, $3.50.....45&10%
Pat. Sewing, Short.$1.00 ₩ doz.....40&10%
Pat. Sewing, Long.....₩ doz $1.20
Pat. Peg, Plain Top.₩ gr $10.00..45&10%
Pat. Peg, Leather Top.₩ gr $12.00..45&10%

Halters.
Covert's, Rope, Jute.....60&10&10&2%
Covert's, Rope, 7-16-in., Jute.....70&2%
Covert's, Rope, ½-in. Hemp.....50&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&2%
Covert's Jute Horse Ties.....70&2%
Covert's Jute Cattle Ties.....70&10&2%
Covert's Adj. Web Halters.....55&5&2%

Hammers—
Handled Hammers—
Maydole's, list Dec. 1, '85.....25&10@35%
Buffalo Hammer Co. / Humason & Beckley / Atha Tool Co. / Verree.....50@50&10%
C. Hammond & Son.....40&10@—%
Fayette R. Plumb.
Artisans' Choice, A. E. Nail...40&10&10%
Regular Y. & P., A. E. Nail.....50%
Horseshoe Turning Hammers.....50%
Other Hammers.....50&10%
Hartford, Nail Hammers.....40&2%
Hartford, Machinists, &c...50&5@50&10%
Magnetic Tack, Nos. 1, 2, 3, $1.35, 1.50 & 1.75.....30&10&10%
Nelson Tool Works.....40&10%
Warner & Nobles.....20@20
Peck, Snow & Wilcox.....40%
Sargent's.....33⅓&10%
Heavy Hammers and Sledges—
3 lb and under..... ₩ lb 40¢ / 3 to 5 lb..... ₩ lb 36¢ / Over 5 lb..... ₩ lb 30¢ } 70@70&10%
Wilkinson's Smiths.....10½¢@11¢₩ lb

Handcuffs and Leg Irons—See Police Goods,

Handles—
Cross-Cut Saw Handles—
Atkins' No. 1 Loop, ₩ pair, 28¢; No. 3 13¢; No. 6, 16¢; No. 2 and No. 4 Reversible, 18¢.
Champion.....15%
Iron, Wrought or Cast—
Door or Thumb.

Nos.....	0	1	2	3	4
Per doz....	$0.90	1.00	1.10	1.35	1.50

60&10&
Roggin's Latches.....₩ doz 30@33
Bronze Iron Drop Latches..₩ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62 Plate, $1.10; no Plate, $0.88..... net
Barn Door, ₩ doz $1.40.....10&10%
Chest and Lifting.....70%
Wood—
Saw and Plane.....40&10@40&10&5%
Hammer, Hatchet, Axe, Sledge, &c...40%
Brad Awl.....₩ gr $2.00
Hickory Firmer Chisel, ass'd. ₩ gr 4.50
Hickory Firmer Chisel, large. ₩ gr 5.00
Apple Firmer Chisel, ass'd...₩ gr 5.00
Apple Firmer Chisel, large...₩ gr 6.00
Socket Firmer Chisel, ass'd...₩ gr 3.00
Socket Framing Chisel, ass'd. ₩ gr 5.00
J. B. Smith & Co.'s Pat File..... 50%
File, assorted..... ₩ gr 7 75 / Auger, assorted..... ₩ gr 5.00 / Auger, large..... ₩ gr 7.00 } 50%
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass.....₩ set $1 25
Pat. Auger, Swan's.....₩ set $1 00
Hoe, Rake, Shovel, &c.....50&10%

Hangers—

Barn Door, old patterns...60&10&10@70%
Barn Door, New England...60&10&10@70
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Wood Track.....55%
U. S. Wood Track.....65%
Champion.....60&10%
Rider and Wooster, Medina Mfg. Co.'s list.....70%
Climax Anti-Friction.....55%
Climax Anti-Friction for Wood Track55%
Zenith for Wood Track.....55%
Reed's Steel Arm.....50%
Challenge, Barn Door.....50%
Sterling.....50@50&10%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Cheritree.....50&10%
Kidder's.....50&10@60%
Boss.....60&10%
Best Anti-Friction.....60&10%
Duplex (Wood Track).....60&10&5%
Terry's Pat., ₩ dos pr. 4 in, $10.00; 5 in. $12.00.....50&10%
Terry's Steel Anti-Friction Leader 50&10%
Terry's Steel Anti-Friction Ideal..50&10%
Cronk's Patent, Steel Covered.....50@5%
Wood Track Iron Clad, ₩ ft. 10¢.....50 &15@60%
Carrier Steel Anti-Friction.....50&10%
Architect, ₩ set $6.00.....20%
Eclipse.....20&10%
Felix, ₩ set $4.50.....20%
Richards'.....30@30&10%
Lane's Standard.....50&5@50&10%
Lane's New Standard.....50@50&5%
Lane's Parlor.....40%
Ball Bearing Door Hanger..20&10@25&10%
Warner's Pat.....20&10@20&10&10%
Stearns' Anti-Friction.20&10@20&10&10%
Stearns' Challenge.....25&10@25&10&10%
Faultless.....40@40&5%
American, ₩ set $6.00.....20&10%
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢.....40%
Paragon, Nos. 1, 2 and 3.....40&10%
Cincinnati.....25&10%
Paragon, Nos. 5, 5¼, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel Cast Iron.....50%
Nickel, Malleable Iron and Steel.....40%
Scranton Anti-Friction Single Strap33⅓%
Wild West, 4 in. Wheel, $15.00; 5 in. Wheel, $21.00.....45%
Star.....40&10@40&10&5%
May.....50&5@50&10%
Barry, $6.00.....40&10%
Interstate.....50%
Magic.....45%

Harness Snaps—See Snaps.

Hatchets—

American Axe and Tool Co.
Blood's
Hunt's
Hurd's
Mann's
Peck's
Underhill's
Buffalo Hammer Co.
Fayette R. Plumb.
C. Hammond & Son.
Kelly's.
Sargent & Co.
P., S. & W. Co.
Ten Eyck Edge Tool Co.
} 40 & 10 @ 50&5 %
Collins.....10%
Schulte, Lohoff & Co.....50@50&5%

Hay and Straw Knives—See Knives.

Hinges—

Blind Hinges—

Parker.....75&2%
Palmer.....50&5&10%
Seymour.....70&2%
Huffer.....50%
Clark's, Nos. 1, 3, 5, 40 and 50 75&10&5@80%
Clark's Mortise Gravity.....50%
Sargent's Nos. 1, 3, 5, 11, 13 75&10@55&10&5%
Sargent's, No. 12.....77&10&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible....70&10&5@75%
Clark's Lull & Porter, Nos. 0, 1, 1¼, 2, 2½, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%

Gate Hinges—

Western.....₩ dos $4.40, 60%
N. E.....₩ dos $7.00, 55%
N. E. Reversible.....₩ dos $5.20, 55&10%
Clark's, Nos. 1, 2, 3.....60&10&5%
N. Y. State.....₩ dos $5.00, 55&10%
Automatic.....₩ dos $12.50, 50%
Common Sense.....₩ doz pair $4.50, 50%
Seymour's.....45&10%
Shepard's.....60&10&5%

Spring Hinges—

Geer's Spring and Blank Butts.....40%
Union Spring Hinge Co.'s list, March 1888.....10%
Acme.....30%
C. S.....25&10%
Empire and Crown.....20%
Hero and Monarch.....55%
American, Gem, and Star.....20%
Oxford.....20%
Barker's Double Acting.....25%
Union Mfg. Co.....25%
Bommer's.....30%
Buckman's.....15@20%
Chicago.....30%
Wiles'.....10%
Devore's.....40%
Rex.....40%
Royal.....60%
Reliable.....60%
Champion.....60%
Bardsley's Patent.....40%
Stearn's.....50&10%
Samson, ₩ gross.....$14.00

Wrought Iron Hinges.
List February 14, 1891.
Strap and T.....50&10%
Corrugated Strap and T.....50 & 10 %
Screw Hook and Strap { 6 to 12 in., ₩ D. 4¢ / 14 to 20 in., ₩ D. 3½¢ / 22 to 36 in., ₩ D. 3¢
Screw Hook and Eye { ⅛ in., ₩ D 7¾¢ / ¼ in., ₩ D 5½¢ / ⅜ in., ₩ D 4½¢
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10%
Plate Hinges { 8, 10 & 12 in., ₩ D.....5¢ / "Providence" { over 12 in., ₩ D. ...4¢

Hoes—

Eye—

D. & H. Scovil.....20%
Lane's Crescent Planters Pattern..45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat. } 50&10&5 @60%
Am. Axe and Tool Co., S. & O. Pat. }
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub.....60&10%

Handled—

Garden, Mortar, &c.....70%
Planter's, Cotton &c.....70%
Warren Hoe.....60%
Magic.....₩ dos $4.00

Hog Rings and Ringers—See Rings and Ringers.

Hoisting Apparatus—See Machines, Hoisting.

Hollow-Ware—See Ware, Hollow.

Holders.

Bag.

Sprengle's Pat.....₩ dos $18.....60%

Bit.

Extension,
Barber's, ₩ dos $15.00.....40@40&10%
Ives, ₩ dos $20.00.....60&5@60&10%
Diagonal.....₩ dos $24.00, 40%
Angular.....₩ dos $24.00, 40&5%

File and Tool—

Bals Pat.....₩ dos $4.00; 25%
Nicholson File Holders.....20%
Dick's Tool Holder.....20%

Hooks—

Cast Iron—

Bird Cage, Sargent's list.....
Bird Cage, Reading.....
Clothes Line, Sargent's list..
Clothes Line, Reading list.
} 60&10&10%
60&10@60&10&10%
Ceiling Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading.50&10@50&10&10%

Wrought Iron—

Cotton.....₩ dos $1.25
Cotton Pat. (N.Y. Mallet & Handle W'ks). 30%
Tassel and Picture (T. & S. Mfg. Co.)..50%
Wrought Staples, Hooks, &c. See Wrought Goods.

Wire—

Wire Coat and Hat, Gem, list April, 1886.....60%
Wire Coat and Hat, Miles', list April, 1886.....50%
Indestructible Coat and Hat.....45%
Wire Coat and Hat, Standard.....60%
Handy Hat and Coat.....50&10%
Steady Ceiling Hooks.....50&10%
Belt.....50@30&10%
Atlas, Coat and Hat.....60%
Bright Wire Goods, see *Wire.*

Miscellaneous.

Grass, No. 2, $2.00; No. 3, $2.25; No. 4, $2.50
Nolin's Grass.....₩ dos $2.25
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks.....See Bench Stops.

Horse Nails—See Nails, Horse.

Horse Shoes—See Shoes, Horse.

Hose, Rubber—

Competition.....75@75&5%
Standard.....60&10&5@60&10&10%
Extra.....40&10@60%
N. Y. B. & P. Co., Para.....25&5%
N. Y. B. & P. Co., Extra.....40@40&5%
N. Y. B. & P. Co., Dundee....40&10 @ 60%

Huskers—

Blair's Adjustable.....₩ gr $8.00
Blair's Adjustable Clipper....₩ gr 7.00
Hubbard's Solid Steel.....₩ gr 4.50

Indurated Fiber-Ware—See Ware, Indurated Fiber.—

Irons.

Sad—

From 4 to 10, at factory....₩ 100 ℔, $2.30@$2.40
Self-Heating.....₩ dos $9.00 net
Self-Heating, Tailors'....₩ dos $18.00 net
Mrs. Pott's Irons.....60@60&10%
Enterprise Star Irons.....60@60&10%
XX Cold Handle Sad Iron.....50&5@60%
Ideal Irons new list.50&10@50 & 10&10%
Salamander, Irons.....25%
B. B. Sad Irons, ₩ ℔.....3 @3½¢
Combined Fluter and Sad Iron, ₩ dos, $15.00.....15%
Fox Reversible, Self-Fluter ₩ dos $24.00
Chinese Laundry (N.E. Butt Co.) 8½¢, 15%
New England.....8¢, 15%
Mahony's Troy Pol. Irons.....25%
Sensible, list Jan. 91.....50&10&5%
Sensible Tailor's Irons.....33⅓%
National Self-Heating.....30%

Soldering—

Soldering Coppers.....₩ ℔ 22 @ 23¢
Covert's Adjustable, list Jan. 1 1886. 35&2%

Irons, Pinking, per dos., 65¢.

Jack Screws—See Screws.

Jacks, Wagon.

Daisy.....40%
Victor.....40%
Lockport.....40%

Kettles—

Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pld. W. M. list Jan. 1, '91.20%
Enameled and Tea—See Hollow Ware.

Keys—

Lock Asso'n list Dec. 30, 1886...50&10@60&5%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss, Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Ratchet Bed Keys.....₩ dos $4.00, 15%
Wollensak Tinned.....50&10%

Knife Sharpeners—See Sharpeners, Knife.

Knives.

Butcher, Shoe, &c—

Wilson's Butcher Knives, List Dec. 8, 1890.....25%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c.....40%
Jordan's AAAl, Butchers', list.....net
Nichols' Butcher Knives.....40&10%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in., $3.80, &c.
Ames' Shoe Knives.....20@25%
Ames' Bread Knives, ₩ dos $1.50, 15@20%
Moran's Shoe and Bread.....20%
Hay and Straw.....See Hay Knives.
Table and Pocket.....See Cutlery.
Corn, Auburn Mfg. Co. Western Pat., $2.00
Corn, Auburn Mfg. Co. Crescent....$3.50

Corn—

Bradley's.....10%
Wadsworth's.....25%

Drawing—

Witherby
P. S. & W.
Mix
New Haven
} .75 @ 75&10 %

Merrill.....60&10@60&10&5%
Douglas.....75@75&5%
Watrous.....15&10@25%
L. & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding.....25@25&5%

Hay and Straw—

Lightning, from jobbers....$8.00 @ $9.00
Wadsworth's.....40&7½@40&10%
Carter's Needle.....₩ dos $11.00@$11.50
Heath's.....₩ dos $13.00@13.50
Auburn Hay, Com. and Spear Point..50%
Auburn, Straw.....40%
Nolin's Hay.....₩ dos. $7.00 @ $8.00

Mincing.

Am. (3d quality), ₩ gr., 1 blade, $7; 2 blades, $12; 3 blades, $18.....net
Lothrop's.....20&10%
Smith's, ₩ doz, Single, $2.00; Double, $3 40@45%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable.....₩ dos $3.00 .25%
Buffalo Double Adj'table. ₩ dos $3.00 25%

Knobs—

Door Mineral.....60@65%
Door For. Jap'd.....70@75%
Door For. Nickel.....$2.00@2.25
Door For. Plated, Nickel.....$2.00@2.25
Drawer, Porcelain.....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885...40%
Furniture Plain.....75¢ gro inch, 10%
Furniture, Wood Screws.....25&10%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....₩ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c..40%

Ladies.—

Melting, Sargent's.....55&10%
Melting, Reading.....35&10%
Melting, Monroe's Pat...₩ dos $4.00, 40%
Melting, P. S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—

Tubular—

Plain with Guards, ₩ dos.....$3.75@4.00
Lift Wire, with Guards.....$4.00@4.25
Square Plain, with Guards....$3.75@4.00
Sq. Lift Wire, with Guards.....$4.50

Police Lanterns (including packages).

2¼-inch Bull's-eye Police regular. ₩ doz $3.60
3-inch Bull's-eye Police regular. ₩ doz $3.90
2¼-inch Bull's-eye Police flash light. ₩ doz $4.00
3-inch Bull's-eye Police flash light. ₩ doz $4.50

Lawn Mowers—See Mowers, Lawn.

Leaders, Cattle.

Humason, Beckley & Co.'s.....70%
Sargent's.....66⅔&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—See Squeezers, Lemon.

Lifters, Transom.

Wollensak's:
Class 3 and 4, Bronzed Iron.....50%
Class 3 and 4, Bronze Metal.....25%
Class 3 and 4, Brass.....25%
Skylight Lifters.....25%
Crown, Eagle and Shield.....50%
Reiher's, list Feb. 20, 1891.
Bronzed Iron Rods.....50&10&10&2%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&2%
Shaw's.....50&10%
Payson's:
Universal.....60%
Solid Grip.....60%
Imperial.....50&10%

Lines—

Cotton and Linen Fish, Draper's.....50%
Draper's and Tate's Chalk.....60%
Draper's Masons' Linen, 24 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Cotton Chalk.....50%
Samson Cotton, No. 4, $2; No. 4½, $2.50; 10%
Silver Lake, Braided, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₩ gro.....25%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50.
Mason's Colored Cotton.....45%
Wire Clothes.. Nos. 18 19 20
100 ft. $4 00 $3 50 $3.00
Ventilator Cord, Samson Braided, White or Drab Cotton..₩ dos $7.50, 20%

Links, Open.

Terry's—per gro.:
Nos..... 1 2 3 4
$6.00 8.00 12.00 16.00

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin... } List March, '84, revised Jan. 1, '85..33⅓&2%
Deitz, Nos. 36 to 39.....40%
Deitz, Nos. 51 to 63.....40&10%
Deitz, Nos. 86 to 96.....30%
Stoddard Lock Co.....30&33⅓%
"Champion" Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....25&2%
"Champion" Cab. and Combin...33⅓%
Yale.....net prices
Romer's.....25%

Door Locks, Latches, &c.

R. & E. Mfg. Co., list Mar. 30, 1889.
Mallory, Wheeler & Co., list July, '88
Sargent & Co., list Aug. 1, '88
Reading Hardware Co., list Feb. 2, '88,
} 65&10@70% Much lower net prices often made.

Brittan, Graham & Mathes, list Jan. 1890.....60&10&10%
Perkins' Burglar Proof.....60&25%
Plate.....33⅓&2%
Barnes Mfg. Co.....40@40&10%
Yale.....net prices
Delta Flat Key.....30%
L. & C. Round Key Latches.....30&10%
L. & C. Flat Key Latches.....33⅓&10%
Romer's Night Latches.....15%
Brooklyn Latches.....50&10%
Shepardson or U. S.....35%
Seed's N. Y. Hasp Lock.....25%

Padlocks—

List June 10, 1891.....50&2%
Norwich Lock Mfg. Co., old list...70&2%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....35&2%
Eureka, Eagle Lock Co.....40&2%
Romer's, Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 500..15%
A. E. Deits.....40%
Champon Padlocks.....40%
Hotchkiss.....30%
Star.....45%
Horseshoe.....₩ dos, $9, 40@40&10%
Barnes Mfg. Co.....40@40&10%
Nock's.....30%
Brown's Pat.....25%
Scandinavian.....90@90&10%
E. T. Fraim's Keystone Scandavian. Nos. 119, 120, 130 and 140.....90&10%
Other Nos.....65%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Slaymaker Barry & Co.
No. 1010 line.....35&5%
No. 41 line.....45&10%
No. 61 line.....50&5%
No. 21 line.....75%

Sash, &c.

Clark's, No. 1, $10; No. 2, $8 ₩ gr..33⅓%
Ferguson's.....33⅓%
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓%
Reading.....66⅔&10@66⅔&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'zed.....₩ gr $4.00
Common Sense, Nickel Plated ₩ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....60@60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect.....60@60&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Stoddard "Practical".....10%
Ives' Patent.....60&10@60&10&5%
Liesche's, No. 100, ₩ gr $8; 105, $10..30%
Davis, Bronze, Barnes Mfg. Co.....50%
Champion Safety, list January, 1889..70%
Security.....70%
Buckeye.....₩ gro $4.80

Lumber Tools—See Tools, Lumber.

Lustre—

Four-ounce Bottles....₩ dos, $1.75; ₩ gross.....$17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.	
Douglas	$5.50	$6.75		50%
Snell's, Rice's Pat.	5.50	6.75	40&10	10%
Jennings	5.50	6.75	45	45&10%
Other Machines	2.35	2.75		
Phillips' Patent with Augers	7.00	7.50		
Miller's Falls	7.50			25%

Fluting.

Knox, 4¼-inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$3.60 each }
Eagle, 3¼-inch Roll, $2.15..... 35%
Eagle, 5¼-inch Roll, $2.85..... 35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each..... 35%
Crown Jewel 6 in.....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each..... 35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal ₩ dos $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; $12.50; 3, $10.00..... 30%
Shepard Hand Fluter, No. 85 ₩ dos 15 00 .. 40%
Shepard Hand Fluter, No. 110 ₩ dos $11.00..... 40%
Shepard Hand Fluter, No. 95 ₩ dos $8.00..... 40%
Clark's Hand Fluter, ₩ dos $15.00.....35%
Combined Fluter and Sad Iron, ₩ dos $15.00.....30%
Buffalo ₩ dos $10.00.....10%

Hoisting—

Moore's Hand Hoist, with Lock Brake.....30%
Moore's Differential Pulley Block...40%
Energy Mfg. Co's.....25%
Sure Grip Steel Tackle Blocks.....25%

Washing—

Anthony Wayne, ₩ doz No. 1, $51 No. 2, $45; No. 3, $42.
Western Star ₩ doz No. 2, $45; No. $48

Mallets.
Hickory.....20&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%
R. & L. Block Co., Hickory & L. V. 30@30&10%

Mattocks. Regular list. 60&10@60&10&5%

Measures—
Standard Fiberware, No. 1, peck, ₱ dozen, $4; ½-peck, $3.50.

Meat Cutters—See Cutters, Meat.

Menders, Harness—
Per doz.....$2.00

Mills.
Coffee—
Box and Side, List Jan. 1. 1888. 60&10@—%
American, Enterprise Mfg Co. 20&10@30%
The Swift, Lane Bros..... 30&10%

Mincing Knives — See Knives, Mincing.

Molasses Gates—See Gates, Molasses.

Money Drawers — See Drawers, Money.

Mowers, Lawn.
Pennsylvania. New Model, Excelsior, Continental, &c.....60@60&5%
Philadelphia.....60&10%
Perfection.....60&10&10%
Easy.....60&10@60&10&5%
Bay State.....60&10@60&10&2½%
Other Machines.....60&10&5@70%

Muzzles—
Safety.....₱ doz, $3.00, 25 %

Nails,
Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, July 15, '89. 75&10@80%
Tack Mfrs.' list.....70@70&10%
Wire Nails, Standard Penny.
Card June 1 '89 base.....$2.10 @ $2.20

Horse—

Nos.	6	7	8	9	10
Ausable.....	.28¢	26¢	25¢	24¢	23¢.

40&5&5&2%

Clinton, Fin..	19¢	17¢	16¢	15¢	14¢..... 30%
Essex.....	.28¢	26¢	25¢	24¢	23¢.

40&5&5&2%

Lyra.	.19¢	17¢	16¢	15¢	14¢..... 30 %
Snowden	19¢	17¢	16¢	15¢	14¢..... 30 %
Putnam.....	.23¢	21¢	20¢	19¢	18¢.

1000 ℔ in year 15%

Vulcan.....	.23¢	21¢	20¢	19¢	18¢..12½&5%
Northwest'n.	25¢	23¢	22¢	21¢	20¢.

25@25&5%

Globe.....	.23¢	21¢	20¢	19¢	18¢.

20&5&5%

Boston.....	.23¢	21¢	20¢	19¢	18¢.

20&5&5%

A. C.....	.25¢	23¢	22¢	21¢	21¢.

25&10@33⅓&5%

C. B.-K.....	.25¢	23¢	22¢	21¢	21¢.

25&10@33⅓&5%

Maud S.....	.25¢	23¢	22¢	21¢	21¢.

40&10 %

Champlain ..	28¢	26¢	25¢	24¢	23¢.

25&10&10%

Saranac.....	23¢	21¢	20¢	19¢	18¢...30&10%
Champion ...	25¢	23¢	22¢	21¢	20¢.

10&10&10%

Capewell....	28¢	26¢	5¢	24¢	23¢.

35&5@35&10%

Star.....	23¢	21¢	¢	19¢	18¢.

10&10@10&12½%

Anchor.....	23¢	21¢	20¢	19¢	18¢..... 35%
Western.....	23¢	21¢	20¢	19¢	18¢..40&10%
Empire Bronzed.....					14 ₱ ℔.

Picture—
Brass Head, Sargent's list.....50&10&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list. 50&10&10%
Porcelain Head, Combination list..40&10%
Niles' Patent.....40%

Nail Pullers.—See Pullers, Nail.

Nail Sets.—See Sets, Nail.

Nut Crackers.—See Crackers, Nut.

Nuts—List Dec. 18, 1889.

	Square.	Hex.
Hot Pressed.....	5.35¢	5.95¢ off list.
Cold Punched.....	5.00¢	5.10¢ off list.

In packages of 100 ℔, add 1-10¢ ₱ ℔, net; in packages less than 100 ℔, add ½¢ ₱ ℔, net.

Oakum—
Best or Government.....₱ ℔ 7@7¼¢
U. S. Navy.....₱ ℔ 6¢@6½¢
Navy.....₱ ℔ 5½@6¢

Oilers—
Zinc and Tin.....65&10@70%
Brass and Copper.....50&10&50&10&5%
Malleable, Hammers' Improved, No. 1, $5.50; No. 2, $4.00; No. 3, $4.40 ₱ doz.
10@10&5%
Malleable, Hammers, Old Pattern, same list.....40%
Prior's Pat. or "Paragon" Zinc, 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....60%
Olmstead's Brass and Copper.....50%
Broughton's Zinc.....60%
Broughton's Brass.....50%
Gem P. D. & Co. .....₱ gro. $2
Steel, Draper and Williams.....50%

Openers, Can.
Messenger's Comet.....₱ doz $3.00, 25%
American.....₱ gross $2 75@$3.00
Duplex.....doz 25¢, 1.0@20%
Lyman's.....₱ doz $3.75, 20%
No. 4 French.....₱ doz $2.25, 55@60%
No. 5, Iron Handle.....₱ gr $6.00, 45&50%
Eureka.....₱ doz $2.50, 10%
Sardine Scissors.....₱ doz $2 75@3.00
Star.....₱ doz $2.75
Sprague, No. 1, $2.00 2, $2.25; 3, $2.50
50&10&10%
Excelsior No. 1 $2.50; No. 2, $1.50.....40%
World's Best, ₱ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ₱ doz $3.00.....&5&5%
Domestic, ₱ doz $2.50.....45%
Champion ₱ doz $2.00.....50%

Packing, Steam—
Rubber—
Standard.....60&5&65%
Extra.....50@50&5%
N. Y. B. & P. Co., Standard.....50%
N. Y. B. & P. Co., Empire.....60%
N. Y. B. & P. Co., Salamander.....25%
Jenkins' Standard, ₱ ℔ 80¢....25@25&5%
Miscellaneous—
American Packing.....10¢@11¢ ₱ ℔
Russia Packing.....14¢ ₱ ℔
Italian Packing.....13¢@14¢ ₱ ℔
Cotton Packing.....15¢@17¢ ₱ ℔
Jute.....7¢@8¢ ₱ ℔

Padlocks—See Locks.

Pails.
Galvanized Iron—

Quarts	10	12	14
Hill's Light Weight, ₱ doz.	$2.75	3.00	3.25
Hill's Heavy Weight, ₱ dz.	3.00	3.25	3.75
Helwig's.....	2.50	2.75	3.00
Sidney Shepard & Co.....	2.35	2.85	3.05
Iron Clad.....	2.50	2.75	3.00
Fire Buckets.....	2.75	3.25	3.50

Buckets, see Well Buckets.
Indurated Fibre Ware—25%
Star Pails, 12 qt.....₱ doz $5.40
Stable and Milk, 14 qt.....₱ doz 96 c0
Fire Pails, deep.....₱ doz $5.40
" " round bottom....₱ doz $7.80
Standard Fibre Ware—

	Plain.	Deer'd
Water Pails, 12 qt., per doz..	$4.00	$4.50
Dairy Pails, 14 qt., per doz.	4.50	5.00
Fire Pails, No. 1, 12 qt. per doz	4.50	
Fire Pails, No. 2, 14 qt. per doz	5.00	
Sugar Pails.....	6.00	6.50
Horse Pails.....	5.50	
Buggy Pails.....	4.00	
Slop Jars (bal. trap).....	8.00	9.00
Chamber Pails, 14-qt.....	6.50	7.50

Pans.
Dripping.
Small sizes.....₱ ℔ 6¼¢
Large sizes.....₱ ℔ 5½¢
Silver & Co. (Covered).....40%
Fry—
Standard List:

No.....	0	1	2	3	4
₱ doz..	$3.00	$3.75	$4.25	$4.75	$5.25
No.....	5	6	7	8	
₱ doz..	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods.....75@75&10%
Acme Fry Pans.....60&10%
Dust—
Steel Edge, No. 1.....₱ doz $1.75

Paper and Cloth—
Sand and Emery—
List April 19, 1886.....50@50&10%
Sibley's Emery and Crocus Cloth.....30%

Parers.
Apple.
Advance.....₱ doz $4.75
Baldwin.....₱ doz 5.25
Bonanza.....each 5.00
Daisy.....₱ doz 4.00
Dandy.....each 7.50
Eclipse.....₱ doz 4.25
Eureka, 1888.....each 16.00
Family Bay State.....₱ doz 12.00
Favorite.....₱ doz 5.00
Gold Medal.....₱ doz 4.00
Ideal.....₱ doz 4.00
Improved Bay State..₱ doz 27.00 @ 30.00
Little Star.....₱ doz 4.50
Monarch.....₱ doz 13.50
New Lightning.....₱ doz 5.50
Orlo.....₱ doz 4.00
Penn.....₱ doz 4.00
Perfection.....₱ doz 4.00
Pomona.....₱ doz 4.00
Rocking Table.....₱ doz 6.00
Turn Table.....₱ doz 4.50
Victor.....₱ doz 13.50
Waverly.....₱ doz 4.00
White Mountain.....₱ doz 4.00
72.....₱ doz 4.25
78.....₱ doz. 7.00
Potato—
White Mountain.....₱ doz $4.50
Antrim Combination.....₱ doz $5.50
Hoosier.....₱ doz $13.50
Saratoga.....₱ doz $5.50

Pencils—
Faber's Carpenters'.....high list 50%
Faber's Round Gilt.....₱ gro $5.25
Dixon's Lead.....₱ gro $4.50
Dixon's Lumber.....₱ gro $6.75
Dixon's Carpenters'.....10%

Picks—
Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60&10@60&10&5%

Picture Nails.—See Nails, Picture.

Pinking Irons.—See Irons, Pinking.

Pins.
Bow—
Humason, Beckley & Co.'s.....60&10%
Sargent & Co's....$17 and $18.....60&10%
Peck, Stow & W Co... 50&10&50&10&5%
Curtain—
Silvered Glass.....net
White Enamel.....net
Escutcheon.
Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Pipe, Wrought Iron—
List September 18, 1889.

1¼ and under, Plain.....	57½%
1¼ and under, Galvanized.....	47½%
1¼ and over, Plain.....	67½%
1¼ and over, Galvanized.....	55%
Boiler Tubes,	
Sizes up to 2¾ in. inclusive.....	55%
Sizes 3 to 6 in. inclusive.....	65%
Sizes 7 in. and up.....	65%
Casing.....	55%
Steel Boiler Tubes.....	30%

Planes and Plane Irons—
Wood Planes—
Molding.....40&10%
Bench, First Quality.....50&10%
Bench, Second Quality.....55&10%
Bailey's (Stanley R. & L. Co.)..... 40&10%
Iron Planes—
Bailey's (Stanley R. & L. Co.)..... 40&10@40&10&10%
Miscellaneous Planes (Stanley R. & L. Co.).....20&10@20&10&10%
Victor Planes (Stanley R. & L. Co.)..... 20&10@20&10&10%
Steer's Iron Planes.....35@35&10%
Merrien Mal. Iron Co.'s.....40@40&10%
Davis's Iron Planes.....40@40&10%
Birmingham Plane Co.....50@50&10%
Gage Tool Co.'s Self-Setting...20&10&10%
Chaplin's Iron Planes.....40@40&10%
Sargent's.....30&10@30&10&10%
Standard Tool Co.....50@50&5%
Plane Irons—
Butcher's.....$5.00@$5.25 to £
Buck Bros.....30%
Auburn "Thistle.....
Ohio.....} ...30&10%
Sandusky.....
S. & I. J. White.....35%

Plates.
Fellce.....₱ ℔ 6¢@6½¢

Pliers and Nippers—
Button's Patent.....50@50&10%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in., $21.00 ₱ doz.....30&10@33⅓%
Humason & Beckley Mfg. Co..50@50&10%
Lindsay's Giant.....40%
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated..60&5%
Eureka Pliers and Nippers.....40%
Russell's Parallel.....25%
P. S. & W. Cast Steel.....50%
P. S. & W. Tinners' Cutting Nippers, add 5% dis 10%
Carew's Pat. Wire Cutters.....20%
Morrill's Parallel, ₱ doz, $12.00....30&5%
Cronk's 8 in., $15.00; 10 in. $31.00, 40@40&5%

Plumbs and Levels—
Regular List.....70&10@70&10&10%
Disston's.....50%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....30%
Davis' Inclinometers.....10&10%

Poachers.
Egg.
Buffalo Steam Egg Poachers, ₱ doz, No. 1, $6.00; No. 2, $9.00.....25%
Silver & Co., 6-Ring..₱ doz $4; 3-Ring $2

Pokes, Animal—
Bishop's I. X. L.....₱ doz $6.00
Bishop's O. K.....₱ doz $5.25
Bishop's Pioneer.....₱ doz $3.75
Bishop's American.....₱ doz $2.75
Eagle, Double Stale.....₱ doz $5.75
Eagle, Single Stale.....₱ doz $3.75
Buckeye, Single Stale.....₱ doz $2.75

Police Goods.
R. I. Tool Co., Handcuffs, $15.00₱ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₱ doz 10%
Tower's.....25%
Daley's Improved Handcuffs: 2 Hands, Polished, ₱ doz $48.00; Nickeled, $57.00; 3 Hands, Polished, ₱ doz $72.00; Nickeled, $84.00.....25%
J. P. Lovell's Police Goods.....25%

Polish, Metal.
Prestoline.....30%
Prestoline Paste.....33⅓%
Gaston's Silver Compound.....33⅓%

Polish, Stove.
Joseph Dixon's.....₱ gro $6.00, 10%
Gem.....₱ gro $4.50, 10%
Gold Medal.....₱ gro $6.00, 25%
Mirror.....₱ pro $6.00, —%
Lustro.....₱ gro $4.75
Ruby.....₱ gro $3.75
Rising Sun, 5 gro lots.....₱ gro $5.50
Dixon's Plumbago.....₱ ℔ 8¢
Boynton's Noon Day, ₱ gro.....13.00
Parlor Pride Stove Enamel..₱ gro
Yates' Liquid, 2 3 5 10 gal....
₱ gal ..$0.80 .70 .60 .50
Yates Standard Paste Polish, 10-℔ cans, ₱ ℔ 12½¢
Jet Black.....₱ gro $3.50
Japanese.....₱ gro $3.50
Fireside.....₱ gro $2.50
Diamond O. K. Enamel.....₱ gro $19.00
Bonnell's Liqid Stove Polish..₱ gro $9.00
Bonnell's Paste Stove Polish..₱ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans.....12½¢
Black Jack Water Paste, 5 and 10 ℔ cans.....12½¢
Nickel Plate Paste.....₱ gro $6.00
Crown Paste.....₱ gross, $7.20
Crown Paste, in 5 and 10 ℔ pails ₱ ℔ 12¢
Black Flag.....₱ gross, $7.20
Black Flag, 5 and 10 ℔ pails,....₱ ℔, 12¢
Black Flag, liquid, in bottles, ₱ gro..$8.00
Diamond Rock Nickel Cleaner..₱ gro $10.20

Poppers, Corn—
Round or Square, 1 qt..₱ gr $10.00@10.50
Round or Square, 1½ qt..₱ gr $15@15.50
Round or Square, 2 qt..₱ gr $18.50@19.00

Post Hole and Tree Augers and Diggers—See Diggers, Post Hole, &c.

Potato Parers—See Parers, Potato.

Pots.
Glue—
Tinned.....40&10@40&10&10&5%
Enameled.....40&10@40&10&10&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy".....50%

Presses.
Fruit and Jelly—
Enterprise Mfg. Co.....20&10@30%
Henis.....₱ doz $3.50
Shepard's Queen City.....40%
Silver & Co.....₱ doz $2.75

Pruning Hooks and Shears.—See Shears.

Pullers.
Nail.
Scranton.....₱ doz $18.00, 33⅓%
Curtiss Hammer.....₱ doz $9.00
Giant, No. 1.....₱ doz, $18.00, 10%
Giant, No. 2.....₱ doz, $15.00, 10%
Pelican.....₱ doz, $9.00, 25%
Eclipse.....each, $2.00 net

Pulleys—
Hot House, Awning, &c.....60&10%
Japanned Screw.....60&10%
Brass Screw.....60&10%
Japanned Side.....60&&10%
Japanned Clothes Line.....60&10%
Empire Sash Pulley.....55@60%
Moore's Sash, Anti-Friction.....50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50.....50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. Solid, $5.70.....50%
Hay Fork, "F" Common and Pat. Bushed.....20%
Hay Fork, Tarbox Pat. Iron.....20%
Hay Fork, Reed's Self-Lubricating...60%
Shade Rack.....45%
Tackle Blocks.....See Blocks
Moore's Anti-Friction 5 in. Wheel, ₱ doz $12.00.....40%

Pumps—
Clatern, Best Makers.....60@60&10%
Pitcher Spout, Best Makers...67½@70%
Pitcher Spout, Cheaper G'ds..75@75&10%

Punches—
Saddlers' or Drive, good, ₱ doz...60@60&
Bemis & Call Co.'s Cast Steel Drive..50&5%
Bemis & Call Co's Springfield Socket.50&5%
Spring, good quality....₱ doz $2.50@2.60
Spring, Leach's Pat.....15%
Bemis & Call Co.'s Spring and Check ..40%
Solid Tinners', P. S. & W. Co., ₱ doz $1.44, 55%
Tin'rs' Hollow Punches P. S. & W. Co. 30&2%
Rice Hand punches.....15%
Avery's Revolving.....40%
Avery's Saw-Set and Punch. See Saw Sets.

Rail—
Sliding Door, Wr't Brass, ₱ ℔ 35¢.....15%
Sliding Door, Bronzed Wr't Iron..₱ ft. 7¢
Sliding Door, Iron, Painted, ₱ foot 4¢, 40%
Barn Door, Light, In. ½ ¾ 1
Per 100 feet.....$2.00 2.50 3.10, 10%

B. D. for N. E. Hangers—

	Small.	Med.	Large.
Per 100 feet....	$2.15	2.70	3.35..net

Terry's Steel Rail, ₱ foot.....4½¢
Victor Track Rail, 7¢ ₱ foot.....50&2%
Carrier Steel Rail, ₱ foot.....4½¢
Moore's Wrought Iron.....25%

Rakes—
Cast Steel, Association goods...66⅔&70%
Cast Steel, outside goods 60&10&10@70&5%
Malleable.....70@70&5%
Gibbs Lawn Rake.....$12.00, 50&15%
Canton Lawn Rake.....$9.00, 50&10%
Ft. Madison Prize Bow Brace and Peerless.....60%
Fort Madison Steel Tooth Lawn Rake, $6.00.....35%

Razors—
J. R. Torrey Razor Co.....30%
Wostenholme and Butcher, $10.00 to £2. 10%
Jordan's AAAI, new list.....net
Jordan's Old Faithful, new list.....net
Galvanic.....₱ doz $15.00

Razor Strops—See Strops, Razor

Rings and Ringers.
Bull Rings—
Union Nut Co.....55%
Sargent's.....65%&10@70&5%
Hotchkiss' low list.....30%
Humason, Beckley & Co.'s.....70&10%
Peck, Stow & W. Co's..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%
Hog—
Top of the Hill Ringers.....₱ doz $2.00
Top of the Hill Rings.....₱ doz $1.25
Hill's Improved Ringers.....₱ doz $1.25
Hill's Old Style Ringers.....₱ doz $1.12½
Hill's Tongs.....₱ doz $3.00
Hill's Rings.....₱ doz bxs $1.00
Perfect Rings.....₱ doz bxs $1.50
Perfect Ringers.....₱ doz $2.15@$2.25
Blair's Hog Ringers.....₱ doz $2.00
Blair's Hog Rings.....₱ doz 90¢@$1.00
Champion Ringers.....₱ doz $2.00
Champion Rings, Double.....₱ doz $2.25
Brown's Ringers.....₱ doz $2.00
Brown's Rings.....₱ doz $1.15@1.25
Electric Hog Rings....₱ doz boxes $1.50
Electric Hog Ringers .....₱ doz $2.00

Rivets and Burrs—
Iron, list Nov. 17, '87.....40%
Copper.....60&10@6 &10 &5%
Coppered Iron, Bettina Brand.....40%

Rivet Sets—See Sets.

Rods—
Stair, Brass.....25&2%
Stair, Black Walnut.....₱ doz 40¢

Rollers—
Barn Door, Sargent's list.....60&10&10%
Acme Moore's Anti-Friction.....50%
Union Barn Door Roller.....70%

Rope.
Manila..¼ in. and larger.....₱ ℔ 11 ¢
Manila.....⅜ in. ₱ ℔ 11½¢
Manila.....¼ and 5-16 in. ₱ ℔ 12 ¢
Manila Tarred Rope.....₱ ℔ 10½¢
Manila, Hay Rope.....℔ 11 ¢
Sisal.....½ inch and larger ₱ ℔ 7¾¢
Sisal.....⅜ in. ₱ ℔ 8¼¢
Sisal.....¼ and 5-16 in. ₱ ℔ 8¾¢
Sisal, Hay Rope.....₱ ℔ 7¾¢
Sisal, Tarred Rope.....₱ ℔ 7¼¢
Sisal, Medium Lathe Yarn.....₱ ℔ 6¼¢
New Zealand..¼ in. and larger ₱ ℔ 7¼¢
New Zealand.....⅜ inch, ₱ ℔ 7¾¢
New Zealand, ¼ and 5-16 inch, ₱ ℔ 8¼¢
New Zealand, Hay Rope.....₱ ℔ 7¼¢
New Zealand, Tarred Rope....₱ ℔ 6¾¢
Note.—Manufacturers' prices on above ¼¢ ₱ ℔ less, f. o. b. factory.
Cotton Rope.....₱ ℔ 13½@16¢
Jute Rope.....₱ ℔ 6 @6¼¢
Wire—
List May 1, 1886.
Iron.....32½&2½%
Iron, Galvanized.....40&2½%
Cast Steel.....40&2½%

Rules—
Boxwood.....80&10&10&80&10&10&10%
Ivory.....50@50&10%
Starrett's Rules and Straight Edges, Steel.....25&10%

Sad Irons—See Irons, Sad.
Sand and Emery Paper and Cloth—See Paper and Cloth, Sand and Emery.
Sash Cord—See Cord, Sash.
Sash Locks—See Locks, Sash.
Sash Weights—See Weights, Sash
Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage

Saws—The following prices are often cut by jobbers.
Disston's Circular.....15@45&5%
Disston's Cross Cuts.....15@45&5 %
Disston's Hand.....20@20&5
Woodrough & McParlin.
Hand, Panel and Rip.....25@25&5 %
Narrow Champion Cross Cuts with Handles, ₱ foot.....18@2 ¢
Champion Thin Back Cross Cuts ₱ foot.....20@2 ¢
Champion Extra Thin Back Cross Cuts, ₱ foot.....20@2 ¢
One Man Champion Cross Cuts ₱ foot.....37@4 ¢
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip.....3@3 & %
Narrow Champion Cross Cuts with Handles, ₱ foot.....18@2 ¢
Champion Thin Back Cross Cuts ₱ foot.....20@2 ¢
Champion Extra Thin Back Cross Cuts, ₱ foot.....20@2 ¢
One Man Champion Cross Cuts, ₱ ft. .....37@4 ¢
Atkins' Circular Shingle and Heading dis 50%
Atkins' Silver Steel Diamond X Cuts ₱ foot 70¢
Atkins' Special Steel Dexter X Cuts ₱ foot 50¢
Atkins' Special Steel Diamond X Cuts ₱ foot 33¢
Atkins' Champion and Electric Tooth X Cuts.....₱ foot 30¢
Atkins' Hollow Back X Cuts..₱ foot 20¢
Atkins' Mulay, Mill and Drag.....40%
Atkins' One-Man Saw, with handles, ₱ foot 40¢
Peace Circular and Mill.....45@45&5%
Peace Hand Panel and Rip....25@25&5%
Peace Cross Cuts.....45@45&5%
Richardson's Circular and Mill.40@45&5%
Richardson's X Cuts.....45@45&5%
Richardson's Hand, &c.....25@25&5%
C. E. Jennings & Co., Hand, Panel and Rip.....₱ @20&1

Hack Saws—

Griffin's, complete.....40&10@50%
Griffin's Hack Saw, Blades.....40&10@50%
Star Hack Saws and Blades.....25%
Eureka and Crescent.....35%

Scroll—

Lester, complete, $10.00.....25%
Rogers, complete, $4.00.....25%
Barnes' Builders' and Cab. Makers' $15.....25%
Barnes' Scroll Saw Blades.....35%

Saw Frames—See Frames, Saw.

Saw Sets—See Sets, Saw.

Saw Tools—See Tools, Saw.

Scales—

Hatch, Counter, No. 171, good quality, ₩ doz $21.00
Hatch, Tea, No. 161....₩ doz $6.75@$7.00
Union Platform, Plain.....$2.10@2.20
Union Platform, Striped.....$2.40@2.50
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Family, Turnbulls.....30@30&10%
Richie Bros.' Platform.....40%

Scale Beams—See Beams, Scale.

Scissors, Fluting.....45%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.) $6.50.....30&10%
Box, 1 Handle.....₩ doz $4.00. 10%
Box, 2 Handle.....₩ doz $6.00. 10%
Defiance Box and Ship.....20&10%
Foot.....50&10@60%
Ship, Common .....₩ doz $3.50 net
Ship, R. I. Tool Co.....10%

Screen Window and Door Frames—See Frames.

Screw Drivers—See Drivers, Screw.

Screws.

Bench and Hand—

Bench, Iron.....55&10@55&10&10%
Bench, Wood, Beech.....₩ doz $2.25
Bench, Wood, Hickory.....20&10%
Hand, Wood .....25&10@25&10&5%
Hand, Grand Rapids, list.....*5%
Lag, Blunt Point, list Jan. 1, 1890.75&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890.....75@75&10%
Bed.....25&5%
Hand Rail, Sargent's.....60&&10%
Hand Rail, H. & F. Mfg. Co...70&10@75%
Hand Rail, Am. Screw Co.....75%
Jack Screws, Millers Falls list..50@50&5%
Jack Screws, P. S. & W.....35%
Jack Screws Sargent...60&10@60&10&5%
Jack Screws Stearns'.....40@40&10%

Cork—

Humason & Beckley Mfg. Co..40&10@50%
Williamson's.....33⅓@33⅓&5%
Howe Bros & Hulbert.....35%

Machine—

Flat Head, Iron.....55%
Round Head, Iron 50%

Wood—

List January 1, 1891.
Flat Head Iron.....72½% } Extra 10 @ 10&5 % often given.
Round Head Iron.....67½%
Flat Head Brass.....72½%
Round Head Brass.....65 %
Flat Head Bronze.....72½%
Round Head Bronze.....65 %
Rogers' Drive Screws.....83⅓%

Scroll Saws—See Saws, Scroll.

Scythes.

Grain.....40&5@40&10%
Grass.....40&10@50%

Scythe Snaths—See Snaths, Scythe

Sets.

Awl and Tool.

Aiken's Sets, Awls and Tools, No. 20, ₩ doz $10.00.....55&10%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9.....25@25&10%
Miller's Falls Adj. Tool Hdls., Nos. 1, $12; 2, $18.....25%
Henry's Combination Haft...₩ doz $6.50
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50.....50&10%
Common Brad Sets, No. 42, $10.50; No. 43, $12.50..70&10&5%

Nail—

Square.....₩ gr., $4 00@$4.25
Round.....₩ gr. $3.25
Buck Bros.....27½%
Cannon's Diamond Point...₩ gr.,$12, 20%

Rivet,

Regular list.....50&10%

Saw—

Stillman's Genuine...₩ doz $5.00@7.75, 40&5%
Stillman's Pattern Hand, ₩ doz $3.25; Cross Cut, 5.25.....45&10%
Common Lever .....₩ doz $2.00, 45@50%
Morrill's No. 1, $15.00; Nos. 3&4, $24.00. 40&10&50%
Leach's. No. 0, $4 00; No. 1, $15, 15@20%
Nash's .....20&10@20&10&10
Hammer, Hotchkiss.....$5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. 30&5%
Bemis & Call Co.'s Lever and Spring Hammer.....30&5%
Bemis & Call Co.'s Plate.....10%
Bemis & Call Co.'s Cross Cut 12½%
Aiken's Genuine.....$18.00, 50&10@60%
Aiken's Imitation.....$7.00, 55&5%
Hart's Pat. Lever.....30%
Disston's Star. 25%
Leopold.....40&10@50%
Atkin's Lever... .....₩ doz No. 1, $6.00
Atkin's Criterion.....₩ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00.....40&10%
Avery's Saw Set and Punch.....50%
Chieftain Co.'s Superior.....₩ doz $7.00
Chieftain Co.'s Royal.....₩ doz $7.50
Crescent.....₩ doz $3.00

Sharpeners, Knife.

Parkins.

Applewood Handles....₩ doz $6.00, 40%
Rosewood or Cocobolo. ₩ doz $900 40%

Shaves, Spoke

Iron.....45%
Wood.....30%
Bailey's (Stanley R. & L. Co.).....40&10%
Stearns'.....30&10%
Cincinnati.....25&10%
Goodell's, ₩ doz $9.00.....25%

Shears—

American (Cast) Iron...75&10@75&10&5%
Barnard's Lamp Trimmers...₩ doz $3.75
Tinners'.....20&2%
Seymour's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's Tailor's Shears 35⅓%
Cast Steel Trimmers: First quality .....80@80&10%
Second quality.....80&10@80&10&10%
Acme Cast Shears.....10&10%
Diamond Cast Shears.....10%
Clipper.....10&10%
Victor Cast Shears.....75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel.....40%
Chicago Drop Forge & F. Co., Solid Steel Forged.....60%
Davenport Cutlery Co.....60@60&10%
Clauss Shear Co., Japanned 70%
Clauss Shear Co., Nickeled, same list.60%
Galvanic, 3½ to 9 in, ₩ doz, $1.00 ₩ inch

Pruning Shears and Hooks.

Disston's Combined Pruning Hook and Saw.....₩ doz $18.00, 20&10%
Disston's Pruning Hook, ₩ doz $12.00, 20&10%
E. S. Lee & Co.'s Pruning Tools.....40%
Pruning Shears, Henry's Pat, ₩ doz $3.75@4.00
Henry's Pruning Shears, ₩ doz $4.25@4.50
Wheeler, M. & C. Co.'s Combination, ₩ doz $12.00, 20%
Dunlap's Saw and Chisel, ₩ doz $8.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2 7.25
P., S. & W. Co.....60%

Tinners', &c.—

Shears and Snips (P. S. & W.).....20@25%
Snips, J. Mallinson & Co.....33⅓%

Sheaves—

Sliding Door—

M. W. Co., list July, 1888..50&10@60&5%
R. & E., list Dec. 18, 1885.....55&20%
Corbin's list.....60&10&2%
Patent Roller.....60&10&2%
Patent Roller, Hatfield's.....75%
Russell's Anti-Friction, list Dec., 18, 1885.....60&2%
Moore's Anti-Friction.....50%

Sliding Shutter—

R. & E. list Dec. 18, 1885.....60&10&2%
Sargent's list.....60&10%
Reading list.....60&10&10%

Shells—

First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality, 14, 16 and 20 gauge ($10 list).....30&10&2%
Prize.....40&2%
Star, Club, Rival and Climax brands, 33⅓&10&2%
Selbold's Comb. Shot Shells.....15&2%
Brass Shot Shells, 1st quality.....60&2%
Brass Shot Shells, Club, Rival, Climax.. 65&2%

Shells Loaded—

Standard List, July 19, 1890..... 40&10&10@40&10&10&5%

Ship Tools—

L. & I. J. White.....20&5%

Shoes, Horse, Mule, &c.—

Horse—

Burden's, Perkins', Phœnix and Bryden's Boss, at factory. $4.00
Bryden's Frog Pressure, at factory.$5.00

Mule—

Add $1 ₩ keg to above prices.

Ox, Wrought—

Ton lots.....₩ ℔ 9¢
1000 ℔ lots.....₩ ℔ 9½¢
500 ℔ lots.....₩ ℔ 10¢

Shot—

	Ton lots	Small lots
Drop, up to B, 25-℔ bag	$1.42	$1.47
Drop, up to B, 5-℔ bag	.35	.36
Drop, B and larger, 25-℔ bag	1.67	1.72
Drop, B and larger 5-℔ bag	.40	.41
Buck and Chilled, 25-℔ bag	1.67	1.72
Buck and Chilled, 5-℔ bag	.40	.41
Dust Shot, 25-℔ bag	2.00	2.05
Dust Shot, 5-℔ bag	.45	.46

Shovels and Spades—

Ames' Shovels, Spades, &c., list Nov. 1, 1885.....20%
NOTE.—Jobbers frequently give 5&7½% extra on above.
Griffith's Black Iron.....50&10%
Griffith's C. S.....60@60&10%
Griffith's Solid C. S. R. R. Goods.....20%
St. Louis Shovel Co.....20@20&7½%
Hussey, Binns & Co.....15@25%
Hubbard & Co.....20@20&7½%
Lehigh Mfg. Co.....50&10%
H. M. Myers Co.....30%
Payne Pettebone & Son.....33⅓&25%
Remington's (Lowman's Pat.)30&10@40%
Rowland's, Black Iron.....50&10%
Rowland's Steel.....60&5@60&10%

Shovels and Tongs—

Iron Head.....50&10@60&10&5%
Brass Head.....60&10&10%

Sieves—

Mann's Tin Rim.....50&25%
Buffalo Metallic, S. S. & Co.....50&25%
Shaker (Barler's Pat.) Flour Sifters.... ₩ doz $2.00; ₩ gr $21.60
Electric.....₩ gr $21.00
A. & W. Sifters.....₩ doz 2.00
Hunter's.....₩ doz $2.00
Smith's Adjustable Sifters ....₩ doz $2.00
Smith's Adjustable Milk Strainer. ₩ doz $2.00
Smith's Adjustable T. & C. Strainer. ₩ doz. $1.25

Sieves, Wooden Rim—

	Iron.	Plated.
Mesh 18, Nested, ₩ doz..	80¢	$1.00
Mesh 20, Nested, ₩ doz..	95¢	1.10
Mesh 24, Nested, ₩ doz..	$1.15	1.25

Skeins, Thimble—

Western list.....75&5@75&10%
Columbus Wrt. Steel..Special net prices
Coldbrookdale Iron Co.....60%
Seneca Falls Pattern.....60%
Utica P. S. T. Skeins.....60%
Utica Turned and Fitted.....35%

Slates—

School, by case.....50&10@50&10&10%

Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.).....65%
Fitch's (Bristol).....50&10%
Hotchkiss.....10%
Andrews.....50%
Sargent's Patent Guarded.....70&10&10%
German, new list.....40&10%
Covert.....50&10&5&2%
Covert, New Patent.....50&10&5&2%
Covert, New R. E.....60&10&5&2%
Covered Spring.....60&10&10%

Snaths, Scythe.

List.....50%

Soldering Irons—See Irons, Soldering.

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8½-inch, ₩ doz., No. 5, $8; No. 5X $9.
Spittoons, Daisy, 8-inch, No. 1, $4; 10 and 11 inch, $6.

Spoke Shaves—See Shaves, Spoke.

Spoke Trimmers—See Trimmers, Spoke.

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp, Co.'s list....70&10%
Solid Table and Tea, Cen. Stamp, Co.'s list.....70&10%
Buffalo S. S. & Co.....33⅓&2%

Silver-Plated—(4 mos. or 5% cash 30 days).

Meriden Brit. Co., Rogers.....40&15%
C. Rogers & Bros.....40&15%
Rogers & Bro.....40&15%
Reed & Barton.....40@40&5%
Wm. Rogers Mfg. Co.....40, 15&5%
Simpson, Hall, Miller & Co.....40, 15&5%
Holmes & Edwards Silver Co...40, 15&5%
L. Boardman & Son.....50&12½%

Miscellaneous.

Holmes & Edwards Silver Co.:
No. 67 Mexican Silver.....50&10&5%
No. 30 Silver Metal.....50&10&5%
No. 24 German Silver.....50&10&5%
No. 50 Nickel Silver.....50&5%
No. 49 Nickel Silver.....50&10&5%
Wm. Rogers Mfg. Co.
Rogers' Silver Metal.....50, 10&5%
18% Rogers' German Silver.....60&5%
22% Rogers' Nickel Silver. .....50&5%
German Silver.....50@50&5
German Silver, Hall & Elton..50&5% cash
Nickel Silver.....50&5@50&10&5% cash
Britannia.....60@60&5%
Boardman's N'ck'l Silver, list July 1, 1891.....60½&5 % cash
Boardman's Britannia Spoons, case lots.....60&5% cash

Springs—

Door.—

Torrey's Rod, regular size....₩ doz $1.30
Gray's, ₩ gr., $20.00.....20%
Bee Rod ₩ gr., $20.00.....20%
Warner's No. 1, ₩ doz, $2.50; No. 2, $3.30.....40&10@50%
Gem (Coil), list April 19, 1886.....10%
Star (Coil), list April 19, 1886.....20%
Victor (Coil).....60@60&10%
Champion (Coil).....60&10@60&10&10%
Cowell's....No. 1, ₩ doz, $18.00; No. 2, $15.00.....50%
Rubber, complete, ₩ doz, $4.50...55&10%
Hercules.....50%
Shaw Door Check and Spring.25@30@35%

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Half Scroll.....60&10&10%
Cliff's Bolster Springs.....25%

Squares—

Steel and Iron, Nickel-Plated.....} .80&10@80&10&10%
Try Square and T Bevels...60&10@60&10&10%
Disston's Try Square and T Bevels....50%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares. 25%
Avery's Flush Bevel Squares.....40%
Avery's Bevel Protractor 50%

Squeezers.

Fodder.—

Blair's.....₩ doz $2.00
Blair's "Climax".....₩ doz $1.25

Lemon—

Porcelain Lined, No. 1....₩ doz $6.00. 25&20%
Wood, No. 2.....₩ doz $3.00, 35%
Wood, Common.....₩ doz $1.70@1.75
Dunlap's Improved .....₩ doz $3.75, 20%
Sammis....No. 1, $5.00; No. 2, $9; 12, $18 ₩ doz.....25&10%
Jennings' Star.....₩ doz $2.50
The Boss.....₩ doz $2.50
Dean's..Nos. 1, ₩ doz $6.50; 2, $3.35; 3, $1.90; Queen, $2.50
Little Giant.....60@50&5%
King.....40&5%
Hotchkiss Straight Flash....₩ doz $12.00
Silver & Co., Glass.....₩ gro. $9.00
Manny Lemon Juice Extractor: Standard.....₩ doz $0.75@$1.00
Improved.....₩ doz $2.00

Standard Fiber Ware—See Ware, Standard Fiber.

Staples.

Blind—

Barbed, ½ in. and larger.....₩ ℔ 7@7½¢
Barbed, ¾ in.....₩ ℔ 8@8½¢
Fence Staples, Galvanized, Fence Staples, Plain..... } Same price as B'rb Wire. See Trd. Rep.

Steelyards.....40&10@50%

Stocks and Dies—

Blacksmith's
Waterford Goods.....40@40&10%
Butterfield's Goods.....40@40&10%
Lightning Screw Plate.....25@30%
Reece's New Screw Plates....33⅓&5@40%
Reversible Ratchet.....30%
Gardner.....35%

Stops, Bench.

Morrill's.....₩ doz $9, 50%
Hotchkiss's.....₩ doz $5. 10@10&10%
Weston's, No. 1, $10; No. 2, $9.25&10&5%
McGill's.....₩ doz $5.....10%
Cincinnati.....25&10%

Stone—

Hindostan No. 1, 3¢; Axe, 3½¢; Slips No. 1, 4½¢
Sand Stone.....₩ ℔ 2½¢
Washita Stone, Extra.....₩ ℔ 22@23¢
Washita Stone, No. 1.....₩ ℔ 19@20¢
Washita Stone, No. 2.....₩ ℔ 12@13¢
Washita Slips, No. 1, Extra..₩ ℔ 44@46¢
Washita Slips, No. 1.....₩ ℔ 33@35¢
Arkansas Stone, No. 1, 4 to 6 in₩ ℔ $1.50
Arkansas Stone, No. 1, 6 to 9 in₩ ℔ $1.85
Turkey Oil Stone, 4 to 8 in.....₩ ℔ 40¢
Turkey Slips.....₩ ℔ $1.00@1 50
Lake Superior, Chase.....₩ ℔ 13¢
Lake Superior Slips, Chase.....₩ ℔ 20¢
Seneca Stone, Red Paper Brand....₩ ℔ 18@20¢
Seneca Stone, High Rounds..₩ ℔ 20@25¢
Seneca Stone, Small Whets..₩ gro $24.00

Stove Polish—See Polish, Stove.

Stretchers, Carpet.

Cast Steel, Polished.....₩ doz $2.25
Cast Iron, Steel Points.....₩ doz 80¢
Socket.....₩ doz $1.75
Bullard's.....25@25&10%

Strops, Razor—

Genuine Emerson.....60@60&5%
Imitation " ....₩ doz $2.00, 20&10&5%
Torrey's.....20%
Badger's Belt and Com.....₩ doz $3.00
Lamont Combination.....₩ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89.50%
Electric.....List net

Stuffers or Fillers, Sausage—

Miles' "Challenge," ₩ doz $30, 50@50&5%
Perry .....₩ doz, No. 1, $15.00; No. 0, $21.00.....50&5@50&10%
Draw Cut No. 4, each $30.00.....20%
Enterprise Mfg. Co.....20&10@30%
Silver's.....40&10%

Sweepers, Carpet.

Bissell No. 5.....₩ doz $17.00
Bissell No. 7 New Drop Pan.₩ doz $19.00
Bissell, Grand.....₩ doz $36.00
Grand Rapids.....₩ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic.....₩ doz $15.00
Jewel.....₩ doz $17.00
Improved Parlor Queen, Nickeled.....₩ doz $27.00
Japanned.....₩ doz $24.00
Excelsior .....₩ doz $22.00
Garland .....₩ doz $18.00
Parlor Queen.....₩ doz $24.00
Housewife's Delight.....₩ doz $15.00
Queen.....₩ doz $16.00
Queen, with band.....₩ doz $18.00
King .....₩ doz $30.00
Weed, Improved.....₩ doz $18.00
Hub.....₩ doz $16.00
Cog-Wheel.....₩ doz $16.00
Easy.....₩ doz $22.00
Monarch.....₩ doz $22.00
Goshen.....₩ doz $21.00
Ladies' Friend.....₩ doz $15.00
Advance .....₩ doz $18.00
Supreme.....₩ doz $22.00

Tacks, Brads, &c.—

List October 19, 1889. Old established standard weights. Short Weight goods are sold at lower prices.

Carpet Tacks—
American, Blued.....75 %
American, Tin'd and Cop'd.77½ %
Steel, Bright and Blued....72½ %
Steel, Tinned and Coppered 75 %
Swedes Iron, Blued.....72½ %
Swedes Iron, Tinned.....75 %
American Iron Tacks.....72½ %
Swedes Iron Tacks—
S. S., Blued.....75 %
S. S., Tinned.....77½ %
Lanc., Blued.....69½ %
Lanc., Tinned.....72½ %
Gimp and Lace Tacks—
S. S., Blued.....75 %
S. S., Tinned.....77½ %
Lanc., Blued.....69½ %
Lanc., Tinned.....72½ %
Basket and Trimmers' Tacks—
Lanc .....65 %
S. S .....70 %
Hungarian Nails.....69½ %
Miners' Tacks, S. S.....75 %
Miners' Tacks, Lanc.....70 %
Common and Patent Brads.69½ %
Leathered Tacks.....20 %
Brush Tacks.....50 %
Looking Glass Tacks.....50 %
Picture-Frame Points.....50 %
Finishing Nails.....69½ %
Trunk and Clout Nails—
Black.....69½ %
Tinned or Coppered.....69½ %
Basket Nails .....62½ %
Chair Nails.....62½ %
Cigar-Box Nails .....50 %
Tin Capped Nails.....50 %
Miscellaneous—
D'ble-Point, 120 count85&10@85&10&10%
Wire Carpet Nails. .....50&10%
Plymouth Rock Steel Carpet Tacks..25%
Wire Brads and Nails, see Nails, Wire.
Steel-Wire Brads, R. & E. Mfg. Co.'s list.....50&10%

Regular discount 10&2½% cash. On many of these goods extra 10@10&10 % is often given.

Tapes, Measuring—

American.....40@40&5%
Spring.....40%
Chesterman's, Regular list.....35@30%

Thermometers—

Tin Case.....80@80&10%

Thimble Skeins—See Skeins.

Ties, Bale—Steel

Standard Wire, list.....50&10&5%

Tinners' Shears, &c.—See Shears Tinners', &c.

Tinware—
Stamped, Japanned and Pieced, list Jan. 20 1887.....70&10@70&25%

Tire Benders, Upsetters, &c—
See Benders and Upsetters, Tire.

Tools.
Coopers'—
Bradley's.....20%
Barton's.....20@20&5%
L. & I. J. White.....20&5%
Albertson Mfg. Co.....25%
Beatty's.....30%
Sandusky Tool Co.....30@30&5%
Shaves, Cincinnati Tool Co.....20%

Lumber.
Ring Peavies, "Blue Line"...₩ dos $20.00
Ring Peavies, Common.....₩ dos $18.00
Steel Socket Peavies.....₩ dos $21.00
Mall. Iron Socket Peavies....₩ dos $19.00
Cant Hooks, "Blue Line"..₩ dos $16.00
Cant Hooks, Common Finish..₩ dos $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish.....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish.....₩ dos $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish.....₩ dos $14.00
Cant Hooks, Clip Clasp, Common Finish.....₩ dos $12.00
Hand Spikes....₩ dos 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₩ dos., 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₩ dos, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₩ dos, 12 ft. $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₩ dos, 12 ft., $14.00; 14 ft., $16.00; 16 ft., $17.00
Swamp Hooks.....₩ dos $13.00

Saw.
Atkins' Perfection.....₩ dos $12.00
Atkins' Excelsior.....₩ dos $6.00
Atkins' Giant.....₩ dos $4.00

Tobacco Cutters—See Cutters, Tobacco.

Transom Lifters—See Lifters, Transom.

Traps—
Game—
Newhouse.....40@40&5%
Oneida Pattern.....70&10%
Game, Blake's Patent.....40&10&5%
Mouse and Rat—
Mouse Wood, Choker, ₩ dos holes, 11@12¢
Mouse, Round Wire.....₩ dos $1.50 10%
Mouse, Cage, Wire.....₩ dos $2.50, 10%
Mouse, Catch-'em-alive.....₩ ds $2.50' 15%
Mouse, Bonanza.....₩ dos $0.90@$1.00
Rat, Decoy.....₩ gr $10.00, 10%
Ideal.....₩ gr $10.00
Cyclone.....₩ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₩ dos., 90¢; in full cases, ₩ dos.....75¢
Hotchkiss Imp. Rat Killer..₩ gro $18.50
Hotchkiss New Rat Killer...₩ gro $16.50
Schuyler's Rat Killer.....₩ gro $15.00

Triers—
Butter and cheese.....25%

Trimmers, Spoke.
Bonney's.....₩ dos $10.00, 50%
Stearns'.....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₩ dos. 55&10%
Douglas'.....₩ dos $9.00, 20%
Cincinnati.....25%

Trowels—
Lothrop's Brick and Plastering, 20&10&5@35%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering.....25%
Peace's Plastering.....25%
Clement & Maynard's.....20%
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%

Trucks, Warehouse, &c.—
B. & L. Block Co.'s list, '82.....40%

Tubes, Boiler—
See Pipe.

Twine—

Flax Twine—	BC.	B.
No. 9, ¼ and ⅛ ℔ Balls	25¢	31¢
No. 12, ¼ and ⅛ ℔ Balls	22¢	30¢
No. 18, ¼ and ⅛ ℔ Balls	20¢	29¢
No. 24, ¼ and ⅛ ℔ Balls	20¢	29¢
No. 36, ¼ and ⅛ ℔ Balls	18¢	28¢
No. 264, Mattress, ¼ and ⅛ ℔ Balls	52@54¢	
Chalk Line, Cotton, ⅛ ℔ Balls	25¢	
Mason Line, Linen, ⅛ ℔ Balls	55¢	
2-Ply Hemp, ¼ and ⅛ ℔ Balls (Spring Twine)	15¼¢	
3-Ply Hemp, 1 ℔ Balls	16@16¼¢	
3-Ply Hemp, 1½ ℔ Balls	15@15¼¢	
Cotton Wrapping, 5 Balls to ℔	15@16¢	
2, 3, 4 and 5-Ply Jute, ⅛ ℔ Balls	10¢	
Wool	6¼@6¾¢	
Paper	13@14¢	
Cotton Mops, 6, 9, 12 and 15 ℔ to dos.	18¢	

Vises—
Solid Box.....50&10@50&10&5%
Parallel—
Fisher & Norris Double Screw.....15&10%
Stephens'.....35@30%
Parker's.....20@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....40&10%
Millers Falls.....40@40&10%
Trenton.....40&5@40&10%
Merrill's.....15@20%
Sargent's.....60&10&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....30@25%
Simpson's Adjustable.....40%
Moore's.....30%
Massey Quick Action.....20@25%
Saw Filers—
Bonney's, Nos. 2 & 3, $15.00.....40&10%
Stearn's.....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises.....33⅓@35%
Sargent's.....66⅔&10%
Hopkins'.....₩ dos $17.50, 10%
Reading.....40&10%
Wentworth.....20&10%
Miscellaneous.
Combination Hand Vises.....₩ gr $42.00
Cowell Hand Vises.....30%
Bauer's Pipe Vises.....10%
Cincinnati.....25&10%
Enterprise Pipe Vises, each.....$3.00
Massey Combination Pipe.....40%

Wads—Price per M.

U.M.C.&W. R. A.—B. E., 11 up...	68¢
U.M.C.&W. R. A.—B. E., 9&10...	82¢
U.M.C.&W. R. A.—B. E., 8.....	96¢
U.M.C.&W.R. A.—B. E., 7.....	$1.10
U.M.C.&W. R. A.—P. E., 11 up..	1.15
U.M.C.&W. R. A.—P. E., 9&10..	1.50
U.M.C.&W. R. A.—P. E., 8.....	1.70
U.M.C.&W.R. A.—P. E., 7.....	1.80
Eley's B. E., 11 up.....	$1.70@$1.75
Eley's P. E., 11@20.....	3.00@ 3.25

Dis. 20&2

Wagon Boxes—See Boxes, Wagon.

Washer Cutters—See Cutters Washer.

Wagon Jacks—See Jacks, Wagon.

Ware, Hollow, Enameled, &c.
Cast Iron, Hollow—
Stove Hollow-Ware—
Ground.....60&10%
Unground.....60&10&10%
White Enameled-Ware—
Maslin Kettles.....70&10@70&10&5%
Boilers and Saucepans.....50&10@60%
Tinned Boilers and S'pans....50&10@60%
Rustless Hollow-Ware.....50@50&5%
Gray Enameled-Ware—
Stove.....50%
Maslin Kettles.....60&10&10%
Boilers and Saucepans.....40&5%
Enameled—
Agate and Granite Ware, list Jan. 1, 1889.....33⅓&10%
Ironclad Enameled Ware...dis 33⅓&10%
Kettles—
Galvanized Tea-Kettles—

Inch....	6	7	8	9
Each....	55¢	60¢		75¢

Standard Fiber—

	Per Dozen. Plain.	Dec'r'd
Wash-Basins, 10½ in.....	$2.00	$2.25
Wash-Basins, 12 in.....	2.25	2.75
Keelers, 11¼ in.....		4.0C
Cuspidors.....		3.0C
Spittoons, "Daisy," 8 in....	4.00	4.5C
Peck Measure.....	4.00	
Half-peck Measure.....	3.50	

See also Pails.
Indurated Fiber—25%
Spittoons, No. 2, ₩ dos.....$3.40
Basins, Ringed, ₩ dos., No. 2.....$3.00
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₩ nest.....$7.50
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₩ nest.....$2.90
Butter Bowls 15, 17 and 19-inch (3 pieces), ₩ nest.....$1.70
Liquid Measures, pt., qt., ½ qt. and funnell (4 pieces) ₩ set.....$1.60
See also *Pails.*
Silver Plated, Hollow—
4 mo. or 5 % cash in 30 days.
Reed & Barton.....
Meriden Britannia Co.....
Simpson, Hall, Miller & Co.....
Rogers & Brother..... } 40&5%
Hartford Silver Plate Co.....
William Rogers Mfg. Co.....

Washers—

Size hole.....	5-16	⅜	½	⅝ to 1⅜
Washers.....	6	5	3.50¢	3

In lots less than 200 ℔, ₩ ℔, add ¼¢, 5-℔ boxes 1¢ to list.

Wedges—
Iron.....₩ ℔ 3½¢
Steel.....₩ ℔ 3¾¢

Weights, Sash—
Solid Eyes.....₩ ton $18@$19

Well Buckets, Galvanized—See Buckets, Well, Galvanized.

Wheels, Well.
8 in., $2.25; 10 in., $2.70; 12 in., $3.38

Wire and Wire Goods—
Iron—
Market,
Br. & Ann., Nos. 0 to 18.....77½%
Cop'd, Nos. 0 to 18.....75%
Galv., Nos. 9 to 18.....67½%
Tin'd, Tinned list Nos. 0 to 18.....67½%
Stone,
Br. and Ann'd, Nos. 16 to 18....77½%
Bright and Ann'd, Nos. 19 to 26.....80%
Br. and Ann'd, Nos. 27 to 36.....82½%
Tinned.....
Tinned Broom Wire, 18 to 21, ₩ ℔.....5¢
Galvanized Fence, Nos. 8 and 9.....70%
Brass, list Jan. 18, 1884.....35%
Copper, list Jan. 18, 1884.....35%
Annealed Wire on Spools.....55%
Malin's Steel and Tin'd on Spools.....55%
Malin's Brass and Cop. on Spools.....45%
Tate's Spooled, Tinned and Annealed.55%
Tate's Spooled Cop. and Brass.....45%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to 2, 30%
Steel Music Wire, 12 to 30....60@70¢ ₩ ℔
Wire Clothes Lines, see Lines.
Wire Picture Cord see cord.
Bright Wire Goods—
Standard list.....30&10%
Wire Cloth and Netting.
Painted Screen Cloth, good quality ₩ 100 sq. ft., $1.40
Galvanized Wire Netting.....70&10@75%

Wire, Barb.—F.o.b. Cars. Dis. 5% cash in 10 days.

	Painted.	Galvanized.
Pittsburgh and Cleveland.	$2.55	$3.05
Allentown, Cincinnati and Joliet	2.65	3.15
St. Louis	2.70	3.20
Keokuk	2.75	3.25
Lockport, Baker Perfect..	2.85	3.35
Lawrence and Omaha....	2.90	3.40
San Francisco	3.80	4.30

Wire Rope—See Rope, Wire.

Wrenches—
American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....40&10@50%
Coes' Genuine.....50&5%
Coes' "Mechanics'".....50&10&5%
Girard Standard.....65&10%
Lamson & Sessions' Engineers'..60&10%
Lamson & Sessions' Standard..70&10%
P. S. & W. Agricultural.....
Girard Agricultural..... } 75&10@75
Lamson & Sessions' Agric'l.. } 10&5%
Bemis & Call's
Pat. Combination.....35%
Merrick's Pattern.....35%
Brigg's Pattern.....25%
Cylinder or Gas Pipe.....40&5%
No. 3 Pipe.....40&10%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₩ dos $4.00, 40%
Webster's Pat. Combination.....25%
Boardman's.....20&10%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Acme, Bright.....50&2%
Acme, Nickeled.....40&2%
Hercules.....70%
Walker's.....55&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....25&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes—
Am. Wringer Co.'s list, July 15, 91..2% cash
Colby Wringer Co., list Sept. 1, '91.2% cash

Wrought Goods—
Staples, Hooks, &c., list Jan. 13, 1886, 85@85&10%

PAINTS, OILS AND COLORS.—Wholesale Prices.

Animal and Vegetable Oils.

Linseed, City, raw..per gal.	37	@	..
Linseed, City, boiled.....	40	@	..
Linseed, Western, raw.....	35	@	36
Lard, City, Extra Winter..	56	@	58
Lard, City, Prime.....	53	@	54
Lard, City, Extra No. 1.....	42½@		45
Lard, City, No. 1.....	37½@		40
Lard, Western, prime.....	52	@	53
Cotton-seed, Crude, prime.	24	@	25
Cotton-seed, Crude, off grades.....	22	@	23
Cotton-seed, Summer Yellow, prime.....	29	@	30
Cotton-seed, Summer Yellow, off grades.....	27	@	28
Sperm, Crude.....	..	@	70
Sperm, Natural Spring.....	..	@	..
Sperm, Bleached Spring.....	..	@	..
Sperm, Natural Winter.....	73	@	75
Sperm, Bleached Winter...	78	@	80
Whale, Crude.....	..	@	45
Whale, Natural Winter.....	54	@	56
Whale, Bleached Winter....	56	@	58
Whale, Extra Bleached.....	58	@	60
Sea Elephant, Bleached Winter.....	63	@	64
Menhaden, Crude, Sound...	..	@	30
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed..	34	@	35
Menhaden, Bleached W'ter.	36	@	37
Menhaden, Extra Bleached	38	@	39
Tallow, City, prime.....	..	@	43
Tallow, Western, prime....	..	@	..
Cocoanut, Ceylon.....	6	@	6¼
Cocoanut, Cochin.....	7	@	7¼
Cod, Domestic.....	36	@	38
Cod, Foreign.....	..	@	..
Red Elaine.....	34	@	36
Red Saponified.....₩ ℔	5	@	6¼
Bank.....per gal	..	@	33
Straits.....	..	@	34
Olive, Italian, bbls.....	62	@	65
Neatsfoot, prime.....	55	@	65
Palm, prime, Lagos....₩ ℔	6	@	6¾

Mineral Oils.

Black, 29 gravity, 25 @ 30 cold test.....per gal	7¼@		8
Black, 29 gravity, 15 cold test.....	8½@		9
Black, 29 gravity, summer.	6½@		7
Cylinder light, filtered.....	15	@	20
Cylinder, dark, filtered	12	@	15
Cylinder, dard, st'm refined	10	@	18
Paraffine, 23½ @ 24 gravity.	13½@		14
Paraffine, 25 gravity.....	12½@		13
Paraffine, 28 gravity.....	9½@		10
Paraffine, red, 21 @ 22 gr'ty	..	@	..
Paraffine, red, 23½@23 gr'ty	13	@	14

Paints and Colors.

Barytes, Foreign, ₩ ton.	$22.00	@	$24.00
Barytes, Amer. floated...	30.00	@	32.00
Barytes, Amer. No. 1....	19.00	@	20.00
Barytes, Amer. No. 2....	13.00	@	16.00
Barytes, Amer., No. 3....	11.00	@	12.00
Blue, Celestial..... ₩ ℔	6	@	8
Blue, Chinese	50	@	55
Blue Prussian.....	25	@	40
Blue, Ultramarine	8	@	25
Brown, Spanish	½@		1
Brown, Vandyke, Amer..	3	@	3½
Brown, Vandyke, English	6	@	8
Carmine, No. 40, in bulk.	3.10	@	..
Carmine, No. 40, in boxes or barrels	3.20	@	..
Carmine, No. 40, in ounce bottles.....	4.20	@	..
Chalk, in bulk.... ₩ ton.	1.75	@	..
Chalk, in bbls..₩ 100 ℔.	33	@	40
China Clay, English..... ₩ ton.	13.00	@	18.00
Cobalt Oxide, prep'd....	2.90	@	....
Cobalt Oxide, black..... lots 100 ℔.	2.60	@	....
Cobalt, Oxide, black..... less 100 ℔.	2.65	@	....
Green, Paris, in bulk....	14	@	15¼
Green Paris, 170 @ 175 ℔ kegs.....	14½@		15¼
Green, Paris, small pack.	16	@	21¾
Green, Chrome, ordinary	8	@	11
Green, Chrome, pure....	22	@	25
Lead, Eng., B.B. white....	8½@		10
Lead, Amn. White, dry or in oil: Kegs, lots less than 500 ℔...		@	7¼
Kegs, lots 500 ℔ to 5 tons....		@	7
Kegs, lots 5 tons to 12 tons..		@	6¾
Kegs, lots 12 tons and over..		@	6½
Lead White in oil 25 ℔ tin pails add to keg price.....		@	⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price...	..	@	¼
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.		@	2¼
Lead, Red, bbls. and ½ bbls....	6½	@	7½
Lead, Red, kegs.....	6¾	@	7¾
Litharge, kegs.....	6¾	@	7½
Litharge, bbls. and ½ bbls....	6½	@	7¼

TERMS, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2¼ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle.....	1.35	@	1¾
Ocher, French Washed....	1½@		2¼
Ocher, German Washed....	1½@		3
Ocher, American.....	½@		1½
Orange Mineral, English...	9	@	9½
Orange Mineral, French....	10	@	10½
Orange Mineral, German ..	9½@		10
Orange Mineral, American.	8	@	8¾
Paris White, English Cliff stone.....	1.00	@	1.15
Paris White, American.....	70	@	75
Red, Indian, English.....	5½@		7
Red, Indian, American....	2	@	6½
Red, Turkey.....	9	@	14
Red, Tuscan	9	@	11
Red, Venetian, American.. ₩ 100 ℔.	1.00	@	1.25
Red, Venetian, English....	1.00	@	1.50
Sienna, Italian, Burnt and Powd.₩ ℔	5	@	6¼
Sienna, Ital., Burnt Lumps	1¾@		3½
Sienna, Ital., Raw, Powd..	5	@	6¼
Sienna, Ital., Raw Lumps..	2	@	3½
Sienna, American, Raw....	1¾@		1¾
Sienna, American, Burnt and Powdered.....	1¾@		1¾
Talc, French.....	1¾@		1¾
Talc, American.....	1	@	1¼
Terra Alba, Fr'ch. ₩ 100 ℔	90	@	1.00
Terra Alba, English	50	@	60
Terra Alba, American No. 1	70	@	75
Terra Alba, American No. 2	40	@	50
Umber, Turkey, Bnt. and Powd..... ₩ ℔	3½@		4
Umber, Turkey Bnt. Ln	2¾@		3
Umber, Turkey, Raw and Powdered.....	3½@		
Umber, Turkey, R'w Lmps	2¾@		2¾
Umber, Turkey, Bnt. Amer.	1¾@		1¾
Umber, Turkey, R'w Amer.	1¾@		1¾
Yellow, Chrome.....	10	@	25
Vermilion American, Lead..	11½@		17
Vermilion, Quicks'er, bulk.	64	@	66
Vermilion, Quicks'er, bags.	65	@	67
Vermilion Quicksilver, smaller pkgs	69	@	71
Vermilion English Import	80	@	85
Vermilion, Imitation, Eng.	8	@	25
Vermilion, Trieste.....	87½@		90
Vermilion, Chinese.....	90	@	95
Whiting, Common. ₩ 100 ℔	40	@	45
Whiting, Gilders'.....	50	@	55
Zinc, American, dry.... ₩ ℔	4½@		5
Zinc, French, Red Seal....	..	@	8½
Zinc, French, Green Seal..	..	@	8¾
Zinc, French, V. M. X....	..	@	7
Zinc, Antwerp, Red Seal...	..	@	7½
Zinc, Antwerp, Green Seal	..	@	8¼
Zinc, German, L. Z. O....	..	@	6¾
Zinc, V M. in Poppy Oil, G. Seal, lots of 1 ton and over.....	10¾@		11¼
lots less than 1 ton	11	@	11¾
Zinc, V. M. in Poppy Oil, Red Seal.....	10	@	..
lots of 1 ton and over....	10	@	10¾
Lots of less than 1 ton....	10½@		10¾

DISCOUNTS.—French Zinc.—Discounts to buyers of 10- bbl. lots of one or assorted grades, 1 %; 25 bbls, 2 %, 50 bbls. 4 %. No discount allowed on less than bbl. lots.

Colors in Oil.

Blue, Chinese.....₩ ℔	35	@	40
Blue, Prussian.....	20	@	45
Blue, Ultramar.ine.....	12	@	18
Brown, Vandyke.....	7	@	12
Green, Chrome.....	8	@	13
Green. Paris.....	16	@	18½
Sienna, Raw.....	7	@	14
Sienna, Burnt.....	7	@	14
Umber Raw.....	7	@	10
Umber, Burnt	7	@	10

Putty.

In barrels and ½ bbls....	1.35	@	1.45
In tubs.....	.01½@		.01¾
In tin cans.....	.01¾@		.02½
In bladders.....	.01¾@		.02¼

Spirits Turpentine.

In barrels	35½@		..
In machine bbls.....	36	@	..

Glue.

Low Grade.....₩ ℔	8	@	10
Cabinet.....	12	@	14
Medium White.....	13	@	15
Extra White.....	17	@	20
French	10	@	22
English.....	10	@	15
Irish.....	12	@	..

CURRENT METAL PRICES.

NOVEMBER 25, 1891.

The fo lowing quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

IRON AND STEEL.

Bar Iron from Store.

Common Iron:	
¾ to 2 in. round and square.. 1 to 6 in. x ⅝ to 1 in....	₩ lb 1.90 @ 2.00¢
Refined Iron:	
¾ to 2 in. round and square. 1 to 4 in. x ⅝ to 1½ in.... 4½ to 6 in. x ⅜ to 1 in.	₩ lb 2.00 @ 2.20¢
1 to 6 in. x ¼ and 5-16	₩ lb 2.20 @ 2.40¢
Rods—⅝ and 11-16 round and sq.	₩ lb 2.10 @ 2.30¢
Bands—1 to 6 x 3-16 to No. 12	₩ lb 2.30 @ 2.50¢
"Burden Best" Iron, base price.	₩ lb 3.00¢
Burden's "H. B. & S." Iron, base price	₩ lb 2.80¢
"Ulster"	₩ lb 3.00¢
Norway Bars	3.75 @ 4.00¢
Norway Shapes	4.50 @ 5.00¢

Merchant Steel from Store.

	Per pound
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots	2¾¢
Best Cast Steel, base price in small lots.	8 ¢
Best Cast Steel Machinery, base price in small lots	5 ¢

Sheet Iron from Store.

	Common American.	R. G.	Cleaned.
10 to 16	₩ lb 2.75 @ 3.00¢	3.35 @	¢
17 to 20	₩ lb 3.00 @ 3.25¢	3.35 @	3.75 ¢
21 to 24	₩ lb 3.35 @ 3.35¢	3.60 @	¢
25 and 26	₩ lb 3.35 @	3.60 @	¢
27	₩ lb 3 50 @ 3.62½¢	3.85 @	¢
28	₩ lb 3.65 @	4.10 @	¢
	B. B.		2d qual.
Galv'd, 14 to 20	₩ lb, 4.75 @	4.60 @	¢
Galv'd, 21 to 24	₩ lb, 5.12 @	5 00 @	¢
Galv'd, 25 to 26	₩ lb, 5.50 @	5.35 @	¢
Galv'd, 27	₩ lb, 5.90 @	5.70 @	¢
Galv'd, 28	₩ lb, 6.25 @	6.10 @	¢
Patent Planished	₩ lb A 10¢	B, 9¢	
Russia	₩ lb 10½¢ @ 11¢		
American Cold Rolled B. B.	₩ lb 5¢ @ 7¢		
Craig Polished Sheet Steel	₩ lb, 8½¢		

English Steel from Store.

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality	₩ lb 12 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 15 ¢
2d quality	₩ lb 14 ¢
3d quality	₩ lb 12½¢
R. Mushet's "Special"	₩ lb 48 ¢
" " "Titanic"	₩ lb 20 ¢

METALS.

Tin.

	Per lb
Banca, Pigs	22½¢
Straits, Pigs	22 ¢
Straits in Bars	24 ¢

Tin Plates.

Charcoal Plates.—Bright. Per box.

Melyn Grade	IC,	10	x 14	@	$6.75
" "	IC,	12	x 12	@	7.00
" "	IC,	14	x 20	@	6.75
" "	IC,	20	x 28	@	13.70
" "	IX,	10	x 14	@	8.25
" "	IX,	12	x 12	@	8.50
" "	IX,	14	x 20	@	8.25
" "	IX,	20	x 28	@	16.50
" "	DC,	12½	x 17	@	6.25
" "	DX,	12½	x 17	@	7.75
Calland Grade	IC,	10	x 14	@	6.70
" "	IC,	12	x 12	@	6.95
" "	IC,	14	x 20	@	6.60
" "	IX,	10	x 14	@	7.85
" "	IX,	12	x 12	@	8.20
" "	IX,	14	x 20	@	7.85
Allaway Grade	IC,	10	x 14	@	6.35
" "	IC,	12	x 12	@	6.50
" "	IC,	14	x 20	@	6.35
" "	IC,	20	x 28	@	12.40
" "	IX,	10	x 14	@	7.50
" "	IX,	12	x 12	@	7.80
" "	IX,	14	x 20	@	7.50
" "	IX,	20	x 28	@	15.00
" "	DC,	12½	x 17	@	6.80
" "	DX,	12½	x 17	6.00 @	7.00

Coke Plates.—Bright.

Steel Coke.—IC,	10	x 14, 14	x 20	@	$5.70
		10	x 20	@	8.10
		20	x 28	@	11.70
IX,	10	x 14, 14	x 20	@	6.60
BV Grade.—IC,	10	x 14, 14	x 20	@	5.70

Charcoal Plates.—Terne.

Dean Grade.—IC,	14	x 20		@	$5.75
		20	x 28	@	10.75
IX,	14	x 20		@	6.87½
		20	x 28	@	12.78
Abearne Grade.—IC,	14	x 20		@	5 50
		20	x 28	@	0 75
IX	14	x 20		@	6 50
		20	x 28	@	50

Tin Boiler Plates.

IXX, 14 x 26	112 sheets	@ $13.50
IXX, 14 x 28	112 sheets	@ 13.75
IXX, 14 x 31	112 sheets	@ 15.25

Copper.

DUTY: Pig, Bar and Ingot, 1¼¢; Old Copper, 1¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 35 % ad valorem.

Ingot

Lake	@ 12 ¢
Ansonia Grade Arizona	@ 11½¢
Ansonia Grade Casting	@ 11 ¢

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, December 5, 1890. Subject to a discount of 10 % @ 20 %, according to size of order.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		22	22	22	23	24	25	28	30
30	72		22	22	22	23	25	27	31	....
36	96		22	22	22	24	26	30	33	....
36	96		22	22	23	25	27	31	35	....
48	96		22	22	24	26	28	32	....	....
48	96		22	22	25	27	29	33	....	....
60	96		22	22	27	29	34	....	....	....
60	96		22	23	28	....	....	....	....	....
84	96		23	24	....	....	....	....	....	....
84	96		24	25	....	....	....	....	....	....
Over 84 in. wide			25	27	....	....	....	....	....	....

All Bath Tub Sheets	16 oz.	14 oz.	12 oz.	10 oz.
Per pound	$0.27	0 29	0 31	0.35

Bolt Copper, ⅜ inch diameter and over, per pound 22¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Copper Bottoms, Pits and Flats.

	Per pound
14 ounce to square foot and heavier	26¢
12 ounce and up to 14 ounce to square foot	27¢
10 ounce and up to 12 ounce	29¢
Lighter than 10 ounce	32¢

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

— % discount.

Tinning.

Net.

Tinning sheets on one side, 10, 12 and 14 x 48 each	8¢
Tinning sheets on one side, 30 x 60 each	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each	12¢
Tinning sheets on one side, other sizes, per square foot	2½¢

For tinning both sides double the above prices.

Planished Brass and Copper.

Not larger than 30 x 60.

16 oz. and heavier	24¢ ₩ lb
14 oz.	25¢ ₩ lb
12 oz.	27¢ ₩ lb

Seamless Brass and Copper Tubes.

Net.

Sept. 16, 1891.

O. G.	N. G.	⅜	½	⅝	¾	⅞	1	1¼
8-14	6-12	35	31	28	27	26	25	22
15	13	36	31	29	28	27	26	23
16	14	37	32	30	29	28	27	23
17	15	38	33	31	28	29	28	24
18	16	40	34	32	30	29	28	25
19	17	41	35	33	32	31	30	27
20	18-19	42	37	35	34	33	32	29
21	20	44	39	37	36	35	34	32
22	21	46	40	39	37	36	35	34
23	22	48	42	40	39	38	37	37
24	23	51	44	42	41	39	38	39
25	24	54	47	44	43	42	41	43

Copper Bronze and Gilding Tube, 8¢ ₩ lb additional.

Brazed Brass Tubing. (To No. 20, inclusive.

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch	45¢
Plain, 5-16 inch	45¢
Plain, ¼ inch	60¢
Plain, 3-16 inch	$1.00
Plain, ⅛ inch	1.50
Fancy Tubing, Brass, to No. 20, inclusive	43¢ ₩ lb
Bronze Tubing, 5¢ ₩ lb more than Brass.	
Discount from list	30 @ .. %

Roll and Sheet Brass.

(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	in. 2	in. 10	in. 12	in. 14	in. 16	in. 18	in. 20	in. 22
	10	12	14	16	18	20	22	24
To No. 20, inclusive	.21	.22	.23	.25	.27	.29	.31	.33
Nos. 21, 22, 23 and 24	.22	.23	.24	.26	.28	.30	.32	.34
Nos. 25 and 26	.22½	.23½	.24½	.27	.29	.31	.33	.35
Nos. 27 and 28	.23	.24	.25	.28	.30	.32	.34	.36

Common High Brass: Wider than and including	in. 24	in. 26	in. 28	in. 30	in. 32	in. 34	in. 36	in. 38
	26	28	30	32	34	36	38	40
To No. 20, inclusive	.36	.39	.42	.46	.50	.55	.60	.65
Nos. 21, 22, 23 and 24	.37	.40	.43	.47	.51	.56	.61	.66
Nos. 25 and 26	.38	.41	.44	.48	.52	.57	.63	.71
Nos. 27 and 28	.39	.42	.45	.49	.53	.58	.65	.75

Discount from List 10 % to 25 %.

Brass and Copper Wire.

List January 17, 1884

Numbered by Stubs' gauge.	Soft & hard high brass.	Spring high brass.	Low brass.	Copper.
All Nos. to No. 16, inclusive	$0.22	$0.24	$0 26	$0.30
No. 17 and No. 18	.23	.25	.27	.31
No. 19 " " 20	.24	.26	.28	.32
No. 21, or 0.032 diam	.25	.27	.29	.33

Discount 10 % to 25 %.

Fine Numbers.

Numbered by London gauge.	Soft & hard high brass.	Spring high brass.	Low brass.	Copper.
No. 22	$0.26	$0.28	$0 30	$0 34
No. 23	.28	.30	.32	.36
No. 24	.30	.32	.34	.38
No. 25	.32	.34	.36	.40
No. 26	.35	.37	.39	.43
No. 27	.38	.40	.42	.46
No. 28	.42	.44	.46	.51
No. 29	.45	.47	.49	.54
No. 30	.48	.50	.52	.62
No. 31	.51	.53	.55	.67
No. 32	.55	.57	.59	.73
No. 33	.59	.61	.63	.82
No. 34	.64	.66	.68	.95
No. 35	.70	.72	.74	1.30
No. 36	.78	.78	.80	1.50
No. 37	1.00	1.02	1.04	1.70
No. 38	1.30	1.32	1.34	2.00
No. 39	2.00	2.02	2.00	3.25
No. 40	2.60	2.62	2.60	5.75

— % discount.

Spring Wire, 2¢ ₩ lb advance.

Copper Belt and Hose Rivets and Burrs.

	Per lb.		Per lb.
No. 5	49¢	No. 11	56¢
No. 6	49¢	No. 12	58¢
No. 7	49¢	No. 13	60¢
No. 8	50¢	No. 14	65¢
No. 9	52¢	No. 15	70¢
No 10	54¢		

60 % @ 10 % discount.

Tobin Bronze—Rods.

¼ inch and larger 17¢ ₩ lb, net

Tobin Bronze—Piston Rods.

1¼ inch and smaller 18¢ ₩ lb, net

Over 1¼ inch 20¢ ₩ lb, net

Spelter.

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.

Western Spelter	6¢
Bertha (pure)	8½¢ @ 9 ¢

Zinc.

Duty; Sheet, 2½¢ ₩ lb.

600 lb casks	7¼¢
Per lb	7¾¢

Lead.

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.

American	4¾¢
Bar	5¼¢
Pipe, subject to trade discount	6¼¢
Tin-Lined Pipe, subject to trade discount	10¢
Block Tin Pipes, subject to trade discount	37½¢
Sheet, subject to trade discount	7¼¢

Solder.

½ @ ½ (Guaranteed)	14½¢
No. 1	12¢
Extra Wiping	11¾¢ @ 13¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson	₩ lb 16 @ 1 6½¢
Hallett's	" @ 13½¢

ALUMINUM.

Prices Per Ton.

Over 98 % pure	₩ lb .75
94 % @ 98 % pure	₩ lb .65

Old Metals.

Prices Paid in New York.

Heavy Copper	₩ lb	10 ¢
Light Copper	₩ lb	9 ¢
Heavy Brass	₩ lb	7 ¢
Light Brass	₩ lb	6 ¢
Lead	₩ lb	3½¢
Tea Lead	₩ lb	3½¢
Zinc	₩ lb	2½¢
No. 1 Pewter	₩ lb	14 ¢
No. 2 Pewter	₩ lb	7 ¢
Wrought Scrap Iron	₩ gross ton	$17.00
Heavy Cast Scrap	₩ gross ton	10.00
Stove Plate Scrap	₩ gross ton	7.00
Burnt Iron	₩ gross ton	5.00